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UNITED STATES AIR FORCE ARMSTRONG LABORATORY

Wastewater Characterization Survey Atlantic City Air National Guard Base, New Jersey

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13. ABSTRACT *(Maximum 200 words)*

Armstrong Laboratory Occupational and Environmental Health Directorate (AL/OEBW), Brooks Air Force Base, Texas conducted a wastewater characterization survey at Atlantic City Air National Guard Base (ACANGB) from 7-13 September 1995. The survey was conducted in response to March 1995 request made by the ACANGB Environmental Coordinator, Capt John Elwood.

Wastewater from industrial actitvities conducted at facilities located at ACANGB, including Federal Aviation Administration facilities, is discharged to the Eg Harbor Township Municipal Utilities Authority (EHTMUA) wastewater treatment plant. Wastewater samples from five sites situated within the base containment area were collected and analyzed for various pollutant parameters to determine the source of potential contaminants in the wastewater and to determine the quality of wastewater discharged to the EHTMUA wastewater treatment plant.

Based on analytical results of samples collected during this survey, potentially hazardous substances are being discharged to the ACANGB sanitary sewer system by various industrial activities occurring on the base. One possible source of contamination is the oil/water separators. According to Air Force Instruction (AFI) 32-7041, wastewaters from operations which produce hazardous wastes, such as aircraft maintenance operations, are required to meet pretreatment standards before being discharged to the wastewater treatment plant, or the wastewater should be handled as hazardous waste. Also, AFI 32-7041 indicates oil/water separators must be inspected and maintained regularly to ensure water quality compliance.

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ATLANTIC CITY AIR NATIONAL GUARD BASE,
ATLANTIC CITY, NEW JERSEY

INTRODUCTION

Armstrong Laboratory Occupational and Environmental Health Directorate (AL/OEBW), Brooks Air Force Base (AFB), Texas conducted a wastewater characterization survey at Atlantic City Air National Guard Base (ACANGB) from 7-13 September 1995. The survey team included Capt Jeff Gillen, MSgt Doris Hemenway, and Sgt David Schultz. The survey was conducted in response to a March 1995 request made by the ACANGB Environmental Coordinator, Capt John Elwood. A copy of the request letter is provided in Appendix A.

Wastewater from industrial activities conducted at facilities located at ACANGB, including Federal Aviation Administration (FAA) facilities, is discharged to the Egg Harbor Township Municipal Utilities Authority (EHTMUA) wastewater treatment plant. Wastewater samples from five sites situated within the base cantonment area were collected and analyzed for various pollutant parameters. Sampling was performed to determine the source of potential contaminants in the wastewater and to determine the quality of wastewater discharged to the EHTMUA wastewater treatment plant.

DISCUSSION

Background

ACANGB is located in southeast New Jersey, approximately 10 miles west of Atlantic City. A site location map is provided as Figure B-1 of Appendix B. The base is home to the 177th Fighter Wing whose mission is to provide F-16 A/B fighter support for the North American Air Defense Command. Approximately 950 active duty guard personnel and 311 civilians are assigned to ACANGB. The Air National Guard also shares the base with the FAA, the number of FAA personnel is unknown. There are approximately 1,000 personnel on this base during the guard reserve training weekend.

To support the mission of the base, several types of industrial facilities are located at the base. These facilities include, but are not limited to: aircraft and vehicle washracks; aircraft maintenance, to include corrosion control, fuel cell repair, and nondestructive repair; aerospace ground equipment (AGE) and motor vehicle maintenance; and mission support facilities, such as the hospital.

Existing wastewater facilities at ACANGB include pump stations, oil/water separators, and a sanitary sewage collection system. The sanitary sewer also receives industrial wastewater from various facilities at the base. The sanitary sewage collection system collects wastewater from activities associated with ACANGB and FAA facilities co-

located at the base. This wastewater collects at a pump station on base and is combined with wastewater from the FAA Technical Training Center, not situated on ACANGB. The combined wastewater then is discharged to the EHTMUA wastewater treatment plant. No permits are known to be maintained by ACANGB. However, EHTMUA prescribes concentration limits for wastewater discharged to their wastewater treatment plant. A summary of the concentration limits is provided in Table 1 (1).

TABLE 1
EHTMUA QUANTITATIVE WASTEWATER DISCHARGE LIMITS

CONTAMINANT	PERMISSIBLE CONCENTRATION	CONTAMINANT	PERMISSIBLE CONCENTRATION
pH	>= to 5 and <=9	Biological Oxygen Demand	<= 300 ppm
Arsenic (as AS)	<4 milligrams/liter (mg/L)	Boron (as Bo)	<1 mg/L
Chromium (total)	<5 mg/L	Chromium (hexavalent)	<2 mg/L
Copper (as Cu)	<1 mg/L	Cyanide (total)	<1 mg/L
Iron (as Fe)	<15 mg/L	Lead (as Pb)	<0.1 mg/L
Nickel (as Ni)	<1 mg/L	Zinc (as Zn)	<5 mg/L
Cadmium (as Cd)	<2 mg/L	Phenol	<0.1 mg/L
Mercury (as Hg)	<0.01 mg/L	Surfactants-MBAS	<10 mg/L
Total Solids	<5000 mg/L	Silver (as Ag)	<0.05 mg/L

Sampling Strategy

A wastewater characterization presurvey was conducted, 7-8 August 1995 by Captain Gillen and 1Lt. Fronapfel at ACANGB. During this presurvey, a sampling strategy was developed with the assistance of ACANGB Bioenvironmental Engineering Services (BES) and Civil Engineering Squadron (CES) personnel (Capt Elwood and MSgt Tyndall). The goals of the sampling plan were to (1) collect wastewater samples from locations around the base which would accurately characterize the base sewage and allow contributing operations to be identified, and (2) determine the quality of wastewater that is discharged to EHTMUA wastewater treatment plant. The sampling activities were conducted during the period 7-13 September 1995. These dates included a unit training assembly (UTA) weekend and thus represent a time of elevated base activity. Five sampling sites and two background sampling sites were selected based on their location relative to industrial facilities supporting the ACANGB and FAA operations. These locations are summarized in Table 2. A site map is in Appendix B.

TABLE 2
SAMPLING SITE DESCRIPTION

SITE	SOURCES OF WASTEWATER
Site 1 Manhole 4	Base effluent from the Atlantic City New Jersey Air National Guard Base and co-located FAA facilities
Site 2 Manhole 6-8	Photo Lab, FAA facility, Squadron Operations, Clinic, Maintenance Dock, Steam Operating Facility, Fuel Cell and Maintenance Facility, and Oil/Water Separator. Manhole is located east of building 246
Site 3 Manhole 15	Aircraft and Maintenance Hangar, Munitions Systems Release Facility, and Aircraft General Purpose Shop. Manhole is located southeast of building 441
Site 4 Manhole 13-1	Aerospace Ground Equipment (AGE) Facility, Oil/Water Separator, and Bulk Storage Facility. East of building 248
Site 5	Facilities at Sites 3 and 4, Portions of Site 2, Civil Engineering and Motor Pool Facility, Petroleum/Oil/Lubricant (POL) Tank Farm and Fuels Lab, and FAA Facilities. Manhole was located between manhole 7 and 8, south of building 402

Table 3 lists the collection periods and the chemical analyses performed on the collected samples. Table B-1 of Appendix B, lists the United States Environmental Protection Agency (USEPA) Methods used to analyze the samples, holding times, and preservation methods.

TABLE 3
ANALYSES PERFORMED

LOCATION	ANALYTICAL REQUIREMENTS
Site 1	**Sample Period**: 7 days **Sample Type**: 24-Hour Composite **Sample Parameters**: EPA method 200.7 metal screen, EPA methods 601/602 Volatile Organic Compounds (VOCs), Chemical Oxygen Demand (COD), Oil and Grease (O/G), Total Petroleum Hydrocarbon (TPH), Total Cyanide, Phenols, Total Residue, Filterable Residue (TDS), Nonfilterable Residue (TSS), Settleable Residue, Total Volatile Residue, Surfactants-MBAs, pH, and Temperature. **Sample Period**: 2 days **Sample Type**: 24-Hour Composite **Sample Parameter**: EPA methods 624/625 Base/Neutral Acids, EPA method 608 Pesticides and Polychlorinated Biphenyls (PCBs), and EPA method 615 Herbicides.
Site 2	**Sample Period**: 5 days **Sample Type**: 24-Hour Composite **Sample Parameters**: EPA method 200.7 metal screen, EPA methods 601/602 VOCs, COD, O/G, TPH, Total Cyanide, Phenols, Total Residue, TDS, TSS, Settleable Residue, Total Volatile Residue, Surfactants-MBAs, pH, and Temperature.
Sites 3,4 and 5	**Sample Period**: 5 days **Sample Type**: 24-Hour Composite **Sample Parameters**: EPA method 200.7 metal screen, EPA methods 601/602 VOCs, COD, O/G, TPH, Phenols, Total Residue, TDS, TSS, Total Volatile Residue, Surfactants-MBAs, pH, and Temperature.
Clinic and Alert Facility Potable Water	**Sample Period**: 5 days **Sample Type**: 24-Hour Composite **Sample Parameters**: EPA method 200.7 metal screen, EPA method 502.2 VOCs and Total Trihalomethanes, COD, O/G, TPH, Total Cyanide, Phenols, Total Residue, TDS, TSS, Settleable Residue, Total Volatile Residue, and Surfactants-MBAs.

Sampling Methods

Samples collected during the survey were analyzed in accordance with Armstrong Laboratory, Occupational and Environmental Health Directorate, Analytical Services Division, Laboratory Guide. These procedures generally follow guidelines established by the USEPA.

Wastewater characterization samples were collected at each of the five sites for a 24-hour period. This was done daily, for 7 days at Site 1 and for 5 days at Sites 2-5. The samples are time-proportional composite samples (i.e., a composite of 48 samples collected at 30 minute intervals). The automated composite samplers used during the survey contained a 2.5-gallon glass jar. The jar was packed in ice prior to each day of sampling. Each day the pH and temperature were measured at each site during sample collection. Physical characteristics (odor, color, etc.) of the samples also were noted.

At the completion of the 24-hour sampling period, representative samples were transferred from the 2.5-gallon glass jar to appropriate sample containers. The sample containers were placed in iced coolers. The coolers were shipped by overnight package service to Armstrong Laboratory's Analytical Services Division at Brooks AFB. Sample preservation was in accordance with Analytical Services Division Laboratory Sampling Guide sampling procedures.

Grab samples of potable water also were collected from Clinic and Alert Facility which represented background sample stations (see Table 2). Upon completion of sample collection, the grab sample containers were placed in iced coolers and shipped by overnight package service to Armstrong Laboratory's Analytical Services Division at Brooks AFB. These samples were collected and preserved in accordance with the AFOEHL sampling procedures.

The chemical oxygen demand (COD) characterizes the strength of the waste water. COD measurements are commonly utilized to estimate the biological oxygen demand (BOD) strength of a waste stream. BOD correlates the impact a waste stream has on the oxygen demand on the receiving water's ecosystem. High strength (OD) wastes may create an anaerobic environment in the receiving water thus impacting marine life. For instance high BOD loads have caused fish kills or killed microbiological populations in a receiving water. Due to strict holding times and difficulties in shipping, BOD samples are commonly done with local laboratories or estimated from COD results. COD measurements are often correlated as being twice the biological oxygen demand factors of a waste. Therefore, BOD concentrations can be estimated by calculating 50% of the measured COD concentrations.

Quality Assurance/Quality Control

Field Quality Assurance/Quality Control (QA/QC)

A field QA/QC program was instituted during the wastewater characterization survey at ACANGB primarily to ensure that a representative sample is available for analysis. An auxiliary goal of the QA/QC program is to verify the accuracy of field procedures and to determine the accuracy and reproducibility of laboratory results. The field QA/QC program used during the survey included the collection of field equipment blank, reagent blank, spike, duplicate, and background samples. In accordance with USEPA sampling protocol, 5 percent of all samples collected were used for each type of QA/QC procedure. Distilled, deionized water was provided by the Armstrong Laboratory Analytical Services Division for the preparation of QA/QC samples.

The following samples were sent to the analytical laboratory to validate the integrity of the samples collected.

Equipment Blank Samples: Field equipment blank samples were collected and analyzed for those parameters listed in Table C-1 of Appendix C. The first blank sample was collected by pumping distilled, deionized water through the Tygon tubing of a composite sampler and then into the appropriate sample containers. The second equipment blank sample was collected by pouring distilled, deionized water into the composite sampler collection jar and then transferring the water to sample containers. Equipment blank samples help indicate accidental or incidental contamination that may have occurred during the sampling process and serve to verify the effectiveness of decontamination procedures. In particular, field equipment blank samples can detect contaminants that may adhere to the inner wall of the Tygon tubing, polyethylene strainer, or the composite sampler collection jar, and potentially cause cross contamination of the samples.

Reagent and Trip Blank Samples: Reagent blank samples were collected and analyzed for the parameters listed in Table C-2 of Appendix C. These samples were collected by pouring distilled, deionized water into sample containers and preserving the samples with the appropriate preservative. Reagent blank samples were collected to determine whether the preservative method could be a source of sample contamination and to quantify any contamination introduced during sample preparation/analysis. Trip blank samples were prepared on site by pouring reagent grade distilled, deionized water into sample containers. Trip samples are used to detect contamination associated with the travel to and from the lab, sampling media, e.g. filter, sample bottles, etc. These samples were analyzed for purgeable and aromatic VOCs also listed in Table C-2. These samples were placed in the coolers shipped from the laboratory and serve as an indication of potential cross contamination which might occur during transportation.

Spike Samples: Spike samples were prepared for those parameters listed in Table C-3 of Appendix C. Spike samples were prepared by the analytical chemist at Armstrong

Laboratory. Results of spike samples are used to identify field, transportation, and sample matrix effects. In addition, spike samples indicate the accuracy of the laboratory's analytical results relative to a known concentration.

Duplicate Samples: Duplicate samples were collected and analyzed for the parameters listed in Tables C-4 and C-5 of Appendix C. Duplicate samples were collected by pouring wastewater from a composite sampler collection jar through a split funnel into appropriate sample containers. It should be noted that the wastewater in the sample collection jar had been well mixed prior to the transfer to the sample containers. Duplicate samples reflect the overall precision of the sampling or analytical methods used in the analyses.

Background Samples: Background samples were collected in accordance to Armstrong Laboratory, Occupational and Environmental Health Directorate, Analytical Services Division, Laboratory Guide (2) and were analyzed for the parameters listed in Table C-6 of Appendix C. Background samples were collected to determine the quality of potable water that enters the sanitary sewer system at ACANGB.

Armstrong Laboratory Internal QA/QC:

The Armstrong Laboratory Analytical Services Division Quality Assurance Plan establishes the guidelines and regulations necessary to meet the analytical laboratory requirements of 43 states, the USEPA, and private accrediting agencies. Specific QA/QC activities include inserting a minimum of 1 blind sample control for each parameter analyzed on a monthly basis and periodic auditing of the laboratory quality assurance items from each branch. All instruments are calibrated for each day of use, and at least one National Institute Standards and Technology/Standard Reference Materials (NIST/SRM) traceable standard and control sample is included with each analytical run. All quality control samples are plotted and tracked by the individual work sections; Corrective action is documented every time a quality assurance parameter is not met. The laboratory participates in numerous proficiency surveys and interlaboratory quality evaluation programs, including the USEPA's Performance Evaluation Study for wastewater. The study involves analyzing samples provided by the USEPA and reporting the results for review.

Site Descriptions

Five sites in the main cantonment area of ACANGB were selected as sampling stations. Sites were selected to determine the source of contaminants present in the ACANGB sanitary sewer system, and to determine the quality of wastewater discharged to the EHTMUA wastewater treatment plant. In addition, two locations were selected as background sampling stations. The background sampling stations were selected to determine the quality of potable water present in the ACANGB sanitary sewer system. Figures B-1 and B-2 of Appendix B illustrate the ACANGB sanitary sewer system and selected sample locations. The following site descriptions represent the sampling locations selected for this survey.

Site 1, Base Effluent: Samples obtained from Site 1 (Figure B-3) were collected from Manhole #4, located in the eastern sector of the main cantonment area of the base. Wastewater at this manhole location of the sanitary sewer system represents the confluence of the wastewater generated by facilities at the ACANGB. Daily sampling was performed at this site throughout the survey (7-13 September 1995).

Site 2, Maintenance Dock: Samples obtained from Site 2 (Figure B-4) were collected from Manhole #6-8, located immediately east of the maintenance dock (Bldg 246). This station receives wastewater from an audiovisual/photo lab (Bldg 137), FAA facility (Bldg 149), squadron operations (Bldg 241), clinic (Bldg 400), maintenance dock, steam operating facility (Bldg 40), fuel cell and maintenance facility (Bldg 242), and an oil/water separator present at this facility. Five 24-hour, time-proportional composite samples were collected at this location over a 6 day period (8-13 September 1995).

Site 3, Aircraft and Maintenance Hangar: Samples obtained from Site 3 (Figure B-5) were collected from Manhole #15 located immediately southeast of the aircraft and maintenance hangar (Bldg 441). Wastewater samples collected from this location are representative of activities which occur at the aircraft and maintenance hangar, munitions system release facility (Bldg 249), and the aircraft general purpose shop (Bldg 36). Five 24-hour, time-proportional composite samples were collected at this location over a 6 day period (8-13 September 1995).

Site 4, Aircraft Ground Equipment Facility: Samples obtained from Site 4 (Figure B-6) were collected at Manhole #13-1, located immediately east of the AGE facility (Bldg 248). This station receives wastewater from the AGE facility and an oil/water separator present at this facility, and a bulk storage facility (Bldg 121). Five 24-hour, time-proportional composite samples were collected at this location over a 6 day period (8-13 September 1995).

Site 5, Civil Engineering and Motor Pool: Samples obtained from Site 5 (Figure B-7) were collected between Manhole # 7 and Manhole #8, both located immediately south of the civil engineering and motor pool facility (Bldg 402). Facilities that discharge to this manhole include those associated with Sites 3 and 4, portions of Site 2, the civil engineering and motor pool facility, POL tank farm and fuels lab (Bldg 470), and an FAA operated facility (Bldg 33). Five 24-hour, time-proportional composite samples were collected at this location over a six day period (8-13 September 1995).

Background Sample Location 1: A drinking water sample was collected from the clinic (Bldg 400) located in the northeast sector of the main cantonment area. This grab sample serves to characterize the potable water discharged to the sanitary sewer system; It was collected on 12 September 1995.

Background Sample Location 2: A drinking water sample was collected from the alert facility. This grab sample serves to characterize the potable water discharged to the sanitary sewer system. It was collected on 12 September 1995.

RESULTS

General

Typical characteristics of the individual constituents found in untreated domestic wastewater are reported in Table 4. Depending on the concentrations of these constituents, wastewater may be classified as strong, medium, or weak (4). These concentrations, along with the maximum permissible concentrations associated with wastewater discharged to the EHTMUA wastewater treatment plant (Table 1), serve as standards by which the quality of wastewater typical of the ACANGB sanitary sewer system may be determined.

Quality Assurance/Quality Control

QA/QC sample results are contained in Appendix C. Table C-1 shows the results of the equipment blank analyses. Analytical results of the first equipment blank, which was prepared by pumping distilled, deionized water through the Tygon tubing of the autosampler, indicate measurable amounts of TPH and solids. Analytical results of the second equipment blank, which was prepared by transferring distilled, deionized water from the composite sampler collection jar to appropriate sample containers, revealed the presence of butylbenzyl phthalate (12.3 ug/l), and diethyl phthalate (10.7 ug/l). Although measurable amounts of constituents were detected in each of the equipment blank samples, overall it appears that field sampling procedures resulted in a minimal amount of accidental or incidental contamination during sample collection.

Table C-2 shows the results of the reagent blank and trip blank samples. Oil and grease represents the only parameter detected in the reagent blank sample and therefore, contamination of samples due to preservation reagents is not suspected. The trip blank sample was analyzed for purgeable VOCs and aromatic VOCs. No detectable levels of purgeable or aromatic VOC's were identified in the sample. However, the laboratory's detection limit of 100 ug/l for VOCs is high. Sample dilution at the laboratory reduced the analytical sensitivity. Therefore, the contribution of low levels (<100 ug/l) of VOCs to the wastewater cannot be evaluated based upon sampling results presented here.

Table C-3 shows the results of the spike sampling performed at Armstrong Laboratory. Performance acceptance limits (PALs) for each parameter are presented in the table. Analytical results of spike sample SS-1 indicate many parameter concentrations do not lie within their applicable PAL. This may be attributed to the fact that the samples arrived at the laboratory at room temperature. Analytical results of spike sample SS-2 indicate that nearly all concentrations were within the PAL. Cyanide, antimony, and surfactants were not recovered within the PAL.

Tables C-4 and C-5 provide results of the duplicate samples collected at Site 1 on 8 September 1995. Duplicate sample analytical results were in good agreement with a cumulative average relative percent difference between duplicate samples of 8.5%. Table

C-4 presents results of the metals and volatile organics analyses. Duplicate results for these parameters were in good agreement. The highest relative percent difference between any duplicate result of these parameters was 9.1% (aluminum). Table C-5 presents the duplicate sample analytical results of other analyses. The duplicate results for COD, oil and grease, total petroleum hydrocarbons (TPH), and cyanide were in good agreement. Duplicate results for phenols and solids, however, were in poor agreement and had a relative percent difference as high as 118% (filterable residue). The high relative percent difference associated with the duplicate solid analyses may be due to the inherent difficulty associated with collecting truly duplicate samples of solids in the field. The suspended and settleable solids tend to settle rapidly once mixing of the sample stops and pouring of the sample begins.

Table C-6 shows the results of the background sampling performed on the potable water collected from the ACANGB clinic and alert facility. Although measurable amounts of various constituents, including oil and grease, TPH, metals, solids, VOCs, and volatile organic hydrocarbons, were detected in the background samples, no concentrations exceeded the maximum contaminant level for drinking water (5).

TABLE 4
TYPICAL COMPOSITION OF UNTREATED DOMESTIC WASTEWATER*

CONTAMINANTS	UNIT	CONCENTRATION		
		WEAK	MEDIUM	STRONG
Solids, total (TS)	mg/l	350	720	1200
Dissolved, total (TDS)	mg/l	250	500	850
Fixed	mg/l	145	300	525
Volatile	mg/l	105	200	325
Suspended solids (SS)	mg/l	100	220	350
Fixed	mg/l	20	55	75
Volatile	mg/l	80	165	275
Settleable solids	mg/l	5	10	20
Biochemical oxygen demand	mg/l	110	220	400
BOD_5, 20°C				
Total organic carbon (TOC)	mg/l	80	160	290
Chemical oxygen demand (COD)	mg/l	250	500	1000
Nitrogen (total as N)	mg/l	20	40	85
Organic	mg/l	8	15	35
Free ammonia	mg/l	12	25	50
Nitrites	mg/l	0	0	0
Nitrates	mg/l	0	0	0
Phosphorus (total as P)	mg/l	4	8	15
Organic	mg/l	1	3	5
Inorganic	mg/l	3	5	10
Chlorides	mg/l	30	50	100
Sulfate	mg/l	20	30	50
Alkalinity (as $CaCO_3$)	mg/l	50	100	200
Grease	mg/l	50	100	150
Total Coliform	no/100 ml	10^6 - 10^7	10^7- 10^8	10^7- 10^9
Volatile organic compounds (VOCs)	µg/l	<100	100-400	>400

*Metcalf and Eddy, Wastwater Engineering - Treatment, Disposal, Reuse.

Wastewater Samples

This section describes the analytical results of this survey. The sampling sites are discussed individually. Tabular data of wastewater sample are in Appendix D. Graphical representation of data are in Appendix E.

Site 1, Base Effluent: Wastewater samples collected at Site 1 are representative of the quality of water that ACANGB discharges to the EHTMUA wastewater treatment plant. Tables D-1 through D-3 contain the results of samples collected at Site 1 over the period 7-13 September 1995. Concentrations of contaminants detected in samples collected at Site 1 are typical of a weak to moderate domestic wastewater. It should be noted that contaminant concentrations increased at Site 1 during UTA days (9-10 September 1995) and remained relatively high through, the morning of 11 September 1995.

Table D-1 provides results of metals and VOCs analyses. Although trace amounts of various metals were detected including aluminum (1.45 mg/l), barium (0.075 mg/l), cadmium (0.005 mg/l), copper (0.086 mg/l), iron (2.76 mg/l), mercury (0.0003 mg/l), and zinc (0.186 mg/l), no concentrations exceeded EHTMUA's maximum permissible concentrations. Low levels of toluene (3.94 ug/l) and 1,4-dichlorobenzene (1.76 ug/l) also were detected in the samples. However, EHTMUA does not designate a maximum permissible concentration for these parameters.

Table D-2 contains results of other analyses of samples collected at Site 1 including COD, oil and grease, TPH, cyanide, phenols, solids, pH, and temperature. All analytical results, except for phenols, indicate the reported concentrations are below EHTMUA's maximum permissible concentrations. Phenols were detected as high as 291 ug/l (0.291 mg/l). EHTMUA's maximum permissible phenol level is 0.1 ug/l.

Table D-3 provides analytical results for BNAs, pesticides, herbicides, and PCBs. Samples were collected at Site 1 on 7 and 9 September 1995. Only bis(2ethylhexyl)phthalate (34 to 50 ug/l) were reported above detection limits. This constituent is a typical laboratory contaminant and may not be attributable to the collected wastewater sample.

Site 2, Maintenance Dock: Wastewater samples collected at Site 2 are representative of the quality of water that is generated at the audiovisual/photo lab, FAA facility, squadron operations, clinic, maintenance dock, steam operating facility, fuel cell, and maintenance facility (where an oil/water separator is located). Tables D-4 through D-5 contain the results of samples collected at Site 2 over the period 8-13 September 1995. During non-UTA days, concentrations of contaminants detected in samples collected at Site 2 are typical of a weak to moderate domestic wastewater, and moderate to strong domestic wastewater during UTA days.

Table D-4 provides results of metals and VOCs analyses. Although trace amounts of various metals were detected including aluminum (1.35 mg/l), barium (0.139 mg/l),

cadmium (0.017 mg/l), copper (0.335 mg/l), iron (6.43 mg/l), lead (0.026 mg/l), manganese (0.109 mg/l), mercury (0.0004 mg/l), silver (0.046 mg/l) and zinc (0.290 mg/l), no concentrations exceeded EHTMUA's maximum permissible concentrations. Low levels of chloroform (3.58 ug/l), 1,4-dichlorobenzene (3.65 ug/l), and toluene (6.11 ug/l) also were detected in the samples. However, EHTMUA does not have a maximum permissible concentration for these parameters.

Table D-5 contains results of other analyses of samples collected at Site 2, including COD, oil and grease, TPH, cyanide, phenols, solids, pH, and temperature. Concentrations of these contaminants are characteristic of a moderate to strong domestic wastewater. Phenols which were detected as high as 298 mg/l and pH with a level of 4 units, exceeded EHTMUA's permissible concentrations. A biochemical oxygen demand (BOD_5) analyses was not performed. However, the reported COD level of 1660 mg/l exceeds EHTMUA's concentration limit. (A COD level greater than approximately 600 mg/l exceeds the EHTMUA maximum permissible BOD_5 concentration limit of 300 mg/l.)

Additional physical characteristics of the wastewater at Site 2 were noted. Survey personnel noted significant amounts of oil and grease and a red substance, suspected to be hydraulic fluid, in the samples. Contaminant concentrations increased during UTA days (9 and 10 September 1995) at Site 2 and remained relatively high through 11 September 1995.

Site 3, Aircraft and Maintenance Hangar: Wastewater samples collected at Site 3 are representative of aircraft and maintenance hangar, munitions system release facility, and aircraft general purpose shop activities. Tables D-6 through D-7 present the analytical results of samples collected at Site 3 from 8-13 September 1995. Concentrations of contaminants detected in samples collected at Site 3 are typical of a medium to strong domestic wastewater. Contaminant concentrations increased at Site 3 during UTA days (9-10 September 1995) and remained relatively high through 11 September 1995. Metal concentrations were highest in samples collected at Site 3 on 11 September 1995.

Table D-6 provides results of metals and VOCs analyses. Trace amounts of various metals were detected including aluminum (3.88 mg/l), antimony (0.009 mg/l), barium (1.64 mg/l), cadmium (0.058 mg/l), chromium (0.016 mg/l), copper (0.179 mg/l), iron (6.57 mg/l), lead (0.065 mg/l), manganese (0.206 mg/l), mercury (0.0012 mg/l), nickel (0.022 mg/l), titanium (0.067 mg/l), and zinc (1.45 mg/l). No concentrations exceeded EHTMUA's maximum permissible concentrations. Low levels of toluene (2.29 ug/l) and 1,1,2-trichloroethane (1.8 ug/l) also were detected in the samples collected at Site 3. However, EHTMUA does not have a maximum permissible concentration for these parameters.

Table D-7 presents results of other analyses of samples collected at Site 3. Other analyses include COD, oil and grease, TPH, phenols, solids, pH, and temperature. Concentrations of these contaminants were characteristic of a moderate to strong domestic wastewater. The maximum phenol concentration of 650 mg/l exceeds the EHTMUA's

maximum permissible concentration. A BOD_5 analyses was not performed. However, the reported COD levels detected above 600 mg/l on 10 and 11 September exceed EHTMUA's BOD_5 concentration limit of 300 mg/l.

Site 4, Aviation Ground Equipment Facility: Wastewater samples collected at Site 4 are representative of activities associated with the AGE facility, the associated oil/water separator, and the bulk storage facility. Tables D-8 through D-9 present results of samples collected at Site 4 over 8-13 September 1995. Concentrations of contaminants in samples collected at Site 4 are typical of a medium domestic wastewater.

Table D-8 presents results of metals and VOCs analyses. Maximum metal concentrations include aluminum (2.64 mg/l), antimony (0.006 mg/l), barium (0.145 mg/l), cadmium (0.119 mg/l), copper (0.834 mg/l), iron (15.9 mg/l), lead (0.164 mg/l), manganese (0.177 mg/l), mercury (0.001 mg/l), nickel (0.039 mg/l), and zinc (0.828 mg/l). Iron and lead represent the only two metals that exceed EHTMUA's maximum permissible concentrations. Maximum concentrations of VOCs detected in samples collected include chlorobenzene (5.98 ug/l), 1,4-dichlorobenzene (36.8 ug/l), and toluene (6.26 ug/l). However, EHTMUA does not prescribe a maximum permissible concentration for these parameters. Measurable amounts of methylene chloride also were detected. This constituent is a common laboratory contaminant and may not be attributable to the collected wastewater sample.

Table D-9 contains results of other analyses of samples collected at Site 4 including COD, oil and grease, TPH, phenols, solids, pH, and temperature. Concentrations of these contaminants are characteristic of a medium domestic wastewater. Phenol concentrations as high as 425 mg/l are the only parameter which exceeds EHTMUA's maximum permissible concentration level. A BOD_5 analyses was not performed. The reported COD level above 600 mg/l (8 September 1995) exceeds EHTMUA's BOD_5 concentration limit of 300 mg/l.

Additional physical characteristics were noted about the wastewater at Site 4. During sampling, survey team noted significant amounts of black, suspended solids in the wastewater. These solids are suspected to be from the oil/water separator at the AGE facility. Contaminant concentrations in samples from Site 4 did not significantly increase during UTA days (9-10 September 1995). However, metal concentrations peaked in samples collected at Site 4 on Monday, 11 September 1995.

Site 5, Civil Engineering and Motor Pool: Wastewater samples collected at Site 5 are representative of activities associated with Sites 3 and 4, portions of Site 2, the civil engineering and motor pool facility, POL tank farm and fuels lab, and an FAA operated facility. Tables D-10 through D-11 contain the results of samples collected at Site 5 over the period 8-13 September 1995. Contaminant concentrations in samples collected at Site 5 are typical of a medium to strong domestic wastewater.

Table D-10 provides results of metals and VOCs analyses. Maximum metal concentrations include aluminum (2.01 mg/l), barium (0.068 mg/l), cadmium (0.008 mg/l), copper (0.188 mg/l), iron (4.96 mg/l), lead (0.043 mg/l), manganese (0.223 mg/l), mercury (0.0014 mg/l), nickel (0.028 mg/l), and zinc (1.03 mg/l). No metals detected in samples collected at Site 5 exceeded EHTMUA's maximum permissible concentrations. VOC analyses of samples collected at Site 5 indicated that the only contaminant detected was toluene with a maximum concentration of greater than 100 mg/l. However, EHTMUA does not have a maximum permissible concentration for toluene.

Table D-11 contains results of other analyses of samples collected at Site 5. Other analyses include: COD, oil and grease, TPH, phenols, solids, pH, and temperature. Concentrations of these contaminants were characteristic of a medium domestic wastewater. Phenols, which were detected as high as 300 mg/l, exceeded EHTMUA's maximum permissible concentration. A BOD_5 analysis was not performed. However, the reported COD levels detected above 600 mg/l on 9 through 13 September 1995 exceeded EHTMUA's BOD_5 concentration limit of 300 mg/l. COD levels were detected above 600 mg/l on 4 of the 5 sampling days, with the maximum concentration (2,000 mg/l) occurring on 11 September 1995.

Contaminant concentrations in samples collected at Site 5 did not significantly increase during UTA days (9-10 September 1995). Many contaminant concentrations, including metals, COD, and solids, peaked in samples collected on Monday, 11 September 1995.

CONCLUSIONS AND RECOMMENDATIONS

Armstrong Laboratory Occupational and Environmental Health Directorate personnel stationed at Brooks Air Force Base (AFB), TX conducted a wastewater characterization survey at Atlantic City Air National Guard Base (ACANGB) from 7-13 September 1995. Sampling was performed to determine the source of potential contaminants in the wastewater, and to determine the quality of wastewater discharged to the EHTMUA wastewater treatment plant. QA/QC samples, background samples of potable water, and wastewater samples from five sites located within the base cantonment area were collected and analyzed for various contaminants. QA/QC samples collected during this survey include duplicate, equipment blanks, reagent blanks, trip blanks, spike samples, and background samples. Analytical results of duplicate samples were in good agreement, with the exception of phenols and solids which had a maximum relative percent difference of 118%. Equipment blank analytical results indicate that field sampling procedures contributed little incidental or accidental contamination during sample collection. Reagent blank analytical results indicate that contamination of samples due to preservation reagents is not suspected. Analytical results of the trip blank sample revealed no detectable levels of purgeable VOCs or aromatic VOCs in the sample. Spike sample SS-1 was not properly preserved and therefore many parameter concentrations did not lie within their respective PAL. Analytical results of spike sample SS-2 indicate that most parameters' concentrations are within their respective PAL. Two background samples of potable water, collected from the ACANGB clinic and alert facility, revealed measurable amounts of

various contaminants. These contaminants include oil and grease, TPH, metals, solids, VOCs, and volatile organic hydrocarbons. No levels exceeded the maximum contaminant level for drinking water.

Based on analytical results discussed in the previous section many analytical parameters are elevated throughout Sites 2-5. Contaminant concentrations decrease (i.e., become diluted) as the wastewater flows to a confluence at Site 1. For example, COD, oil and grease, phenols, and solids all exhibited relatively high concentrations in Sites 2-5 compared to their concentrations at Site 1. Phenols represent the only parameter at Site 1 which remained above EHTMUA's maximum permissible concentration.

Sites 1-3 exhibited an increase in contaminant concentrations during UTA days (9-10 September 1995). These concentrations remained relatively high through Monday, 11 September. Metals detected in samples collected at Site 4, along with metals, COD, and solids detected in samples collected at Site 5, peaked on Monday following the UTA. Initially it was suspected that samples collected on 11 September 1995 would indicate the potential contribution of contaminants to the wastewater by FAA facilities located on base. This conclusion cannot be substantiated with the available data.

Based on analytical results of samples collected during this survey, potentially hazardous substances are being discharged to the ACANGB sanitary sewer system by various industrial activities occur on the base. One possible source of contamination is the oil/water separators. This untreated wastewater from the oil/water separators combines with other effluent and is discharged to the EHTMUA wastewater treatment plant. Most contaminants detected in the wastewater at Site 1, the base effluent, were below EHTMUA's maximum permissible concentration levels. Many parameters detected at Sites 2-5 were above the permissible concentration levels. Therefore, it cannot be concluded that the quality of wastewater being discharged from ACANGB will be within the range of permissible concentrations. According to Air Force Instruction (AFI) 32-1067, wastewaters from operations which produce hazardous wastes such as aircraft maintenance operations, are required to meet pretreatment standards before being discharged to the wastewater treatment plant, or the wastewater should be handled as hazardous waste (6). In addition, AFI 32-7041 indicates that oil/water separators must be inspected and maintained regularly to ensure water quality compliance (7). A review of the operation and maintenance procedures for the base's oil/water separators is recommended.

The results discussed in this report reflect the quality of the wastewater during the period of this survey. Any changes that may have occurred to operations, shop practices, chemical usage, base population, or mission since the completion of this survey will change the nature of future discharges into the sanitary sewer collection system and the EHTMUA wastewater treatment plant.

REFERENCES

1. Egg harbor Township Municipal Utilities Authority, *Rules and Regulations Governing Sewer System.* Atlantic County, New Jersey: November 1989.

2. Armstrong Laboratory, Occupational and Environmental Health Directorate, Analytical Services Division, *Laboratory Guide.* Brooks AFB, Texas: October 1994.

3. Standard Methods for the Examination of Water and Wastewater, 17th Edition, *Methods 5210B and 5220D.* Washington, D.C.: 1989.

4. Metcalf and Eddy, *Wastewater Engineering-Treatment, Disposal, Reuse.* New York: McGraw-Hill, Inc., 1991.

5. United States Environmental Protection Agency, *Drinking Water Regulations and Health Advisories.* Washington D.C.: February 1996.

6. United States Air Force, Air Force Instruction 32-1067, *Waste Water Management.* Department of Defense: March 1996.

7. United States Air Force, Air Force Instruction 32-7041, *Water Quality Compliance.* Secretary of the Air Force: May 1994.

APPENDIX A

REQUEST LETTER

NEW JERSEY AIR NATIONAL GUARD
HEADQUARTERS 177TH FIGHTER GROUP
PLEASANTVILLE NJ

23 March 1995

MEMORANDUM FOR: AL/OEBW
ATTENTION: Captain Franz Schmidt

FROM: 177 FG/EM
400 Langley Road
Pleasantville NJ 08232-9500

SUBJECT: Request for Wastewater Characterization Survey

1. We request that AL/OEBW conduct a wastewater characterization survey at Atlantic City Air National Guard Base.

2. I talked to SSgt Pete Davis today to determine what you will need prior to a pre-survey and cost estimate. I am preparing the following documents to forward to you:

a. A copy of our NPDES storm water permit (~~individual~~) not necessary - sanitary system only
b. A complete set of the Base sewer system plans (~~storm~~, sanitary, and septic)
c. Copies of the local utility authority regulations

5/5/95

3. This project has already been validated by the Air National Guard Readiness Center. Funding will be transferred from the current ANG Armstrong Laboratory account.

4. Thanks in advance for your effort. Please call me at DSN: 455-6328 if you have any questions.

John C Elwood

JOHN C. ELWOOD, Captain, NJANG
Environmental Coordinator

cc:
177 FG/CC

APPENDIX B

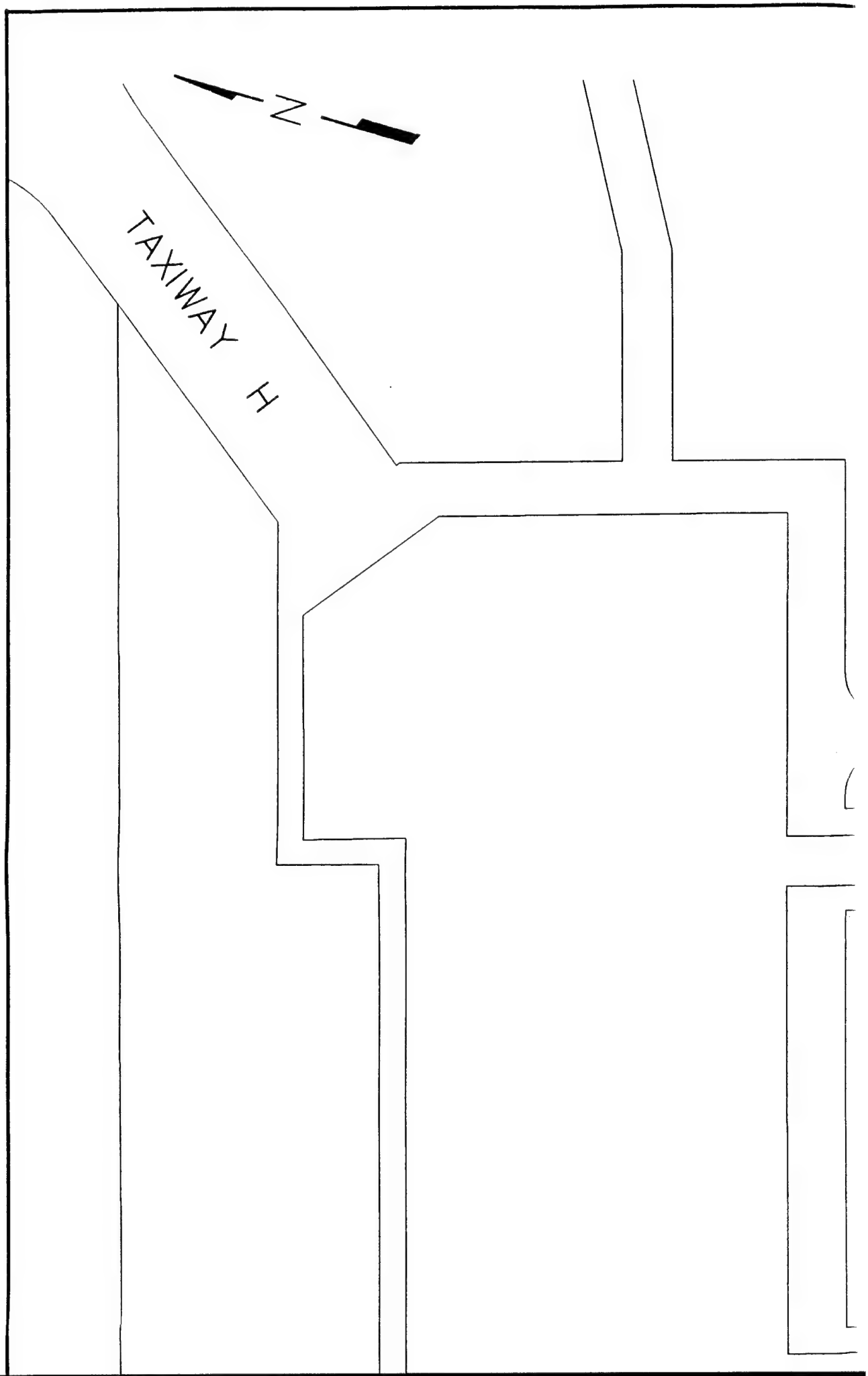
SAMPLE ANALYSES
AND
SAMPLE LOCATION MAPS

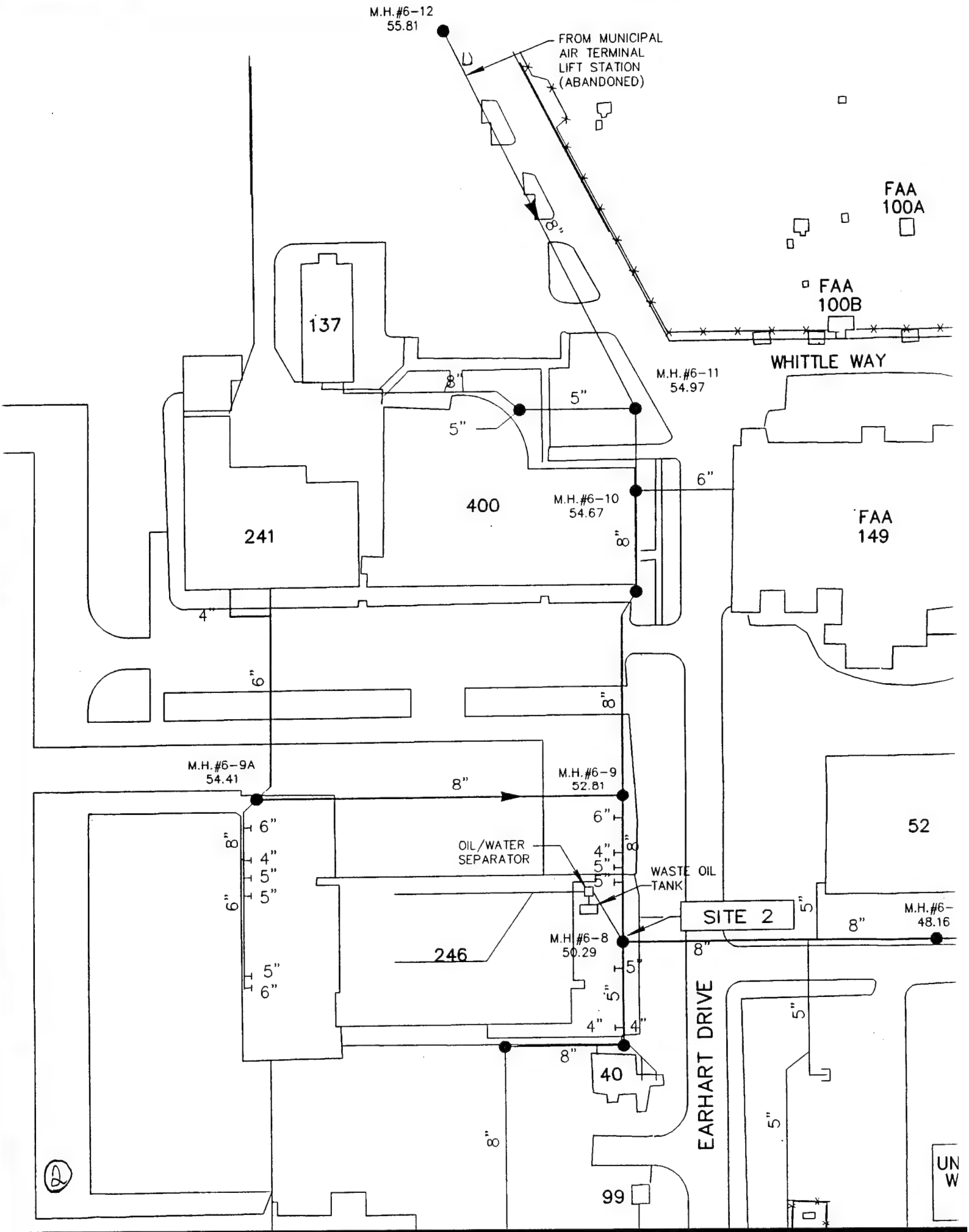
TABLE B-1: WASTEWATER ANALYTICAL AND PRESERVATION METHODS

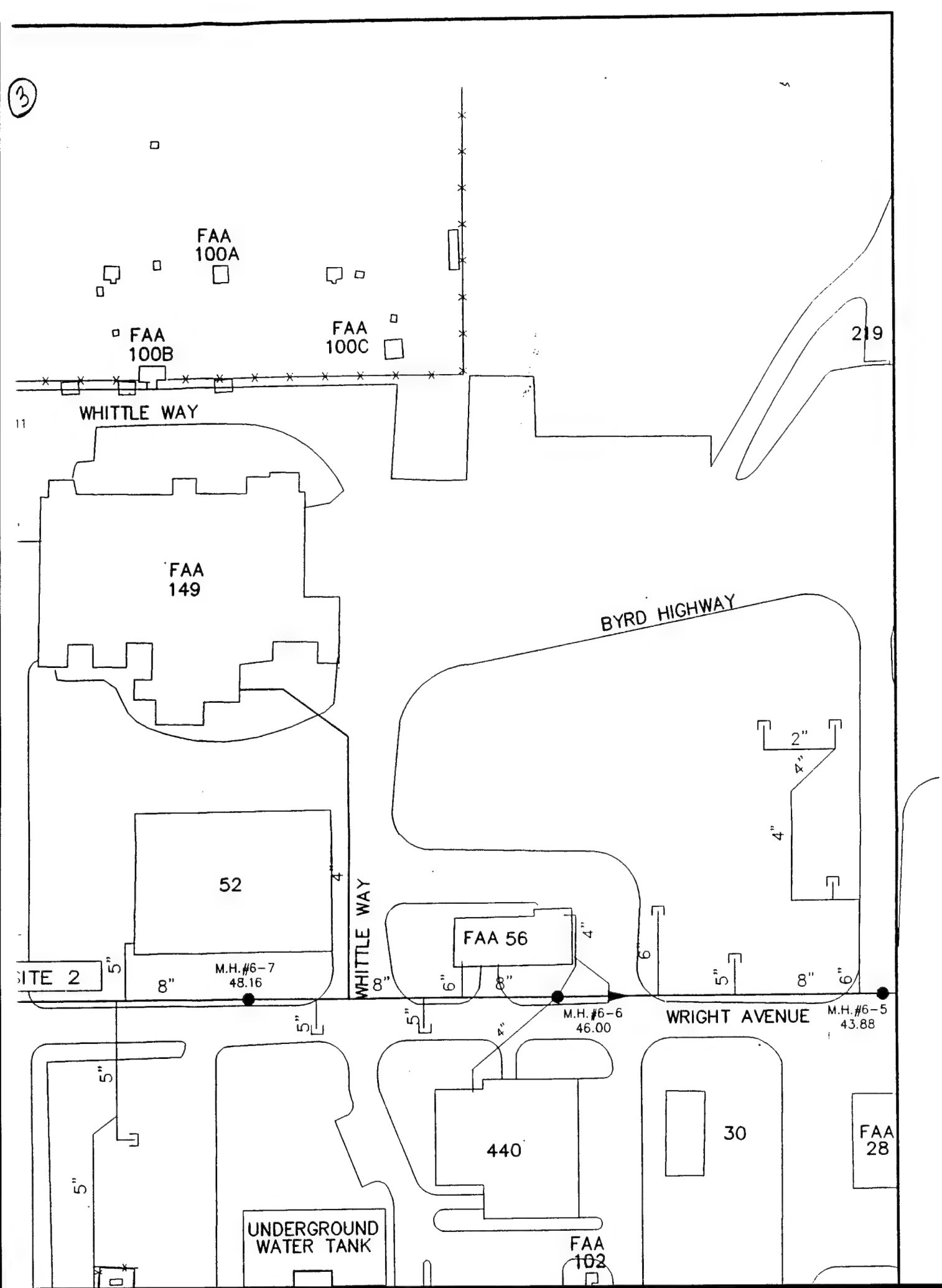
PARAMETER	EPA METHOD	PRESERVATION	HOLDING TIME (days)
Aluminum	200.7	HNO_3	180
Antimony	200.7	HNO_3	180
Arsenic	200.7	HNO_3	180
Barium	200.7	HNO_3	180
Beryllium	200.7	HNO_3	180
Cadmium	200.7	HNO_3	180
Chromium (Total)	200.7	HNO_3	180
Cobalt	200.7	HNO_3	180
Copper	200.7	HNO_3	180
Iron	200.7	HNO_3	180
Lead	200.7	HNO_3	180
Manganese	200.7	HNO_3	180
Mercury	200.7	HNO_3	180
Molybdenum	200.7	HNO_3	180
Nickel	200.7	HNO_3	180
Selenium	200.7	HNO_3	180
Silver	200.7	HNO_3	180
Thallium	200.7	HNO_3	180
Titanium	200.7	HNO_3	180
Vanadium	200.7	HNO_3	180
Zinc	200.7	HNO_3	180
Cyanide	335.3	NaOH	14
Chemical Oxygen Demand (COD)	410.4	H_2SO_4,4°C	28
Phenols	420.2	H_2SO_4,4°C	28
Oil and Grease	413	H_2SO_4,4°C	28
Total Petroleum Hydrocarbons (TPH)	418.1	H_2SO_4,4°C	28
Total Toxic Organics	625	4°C	7

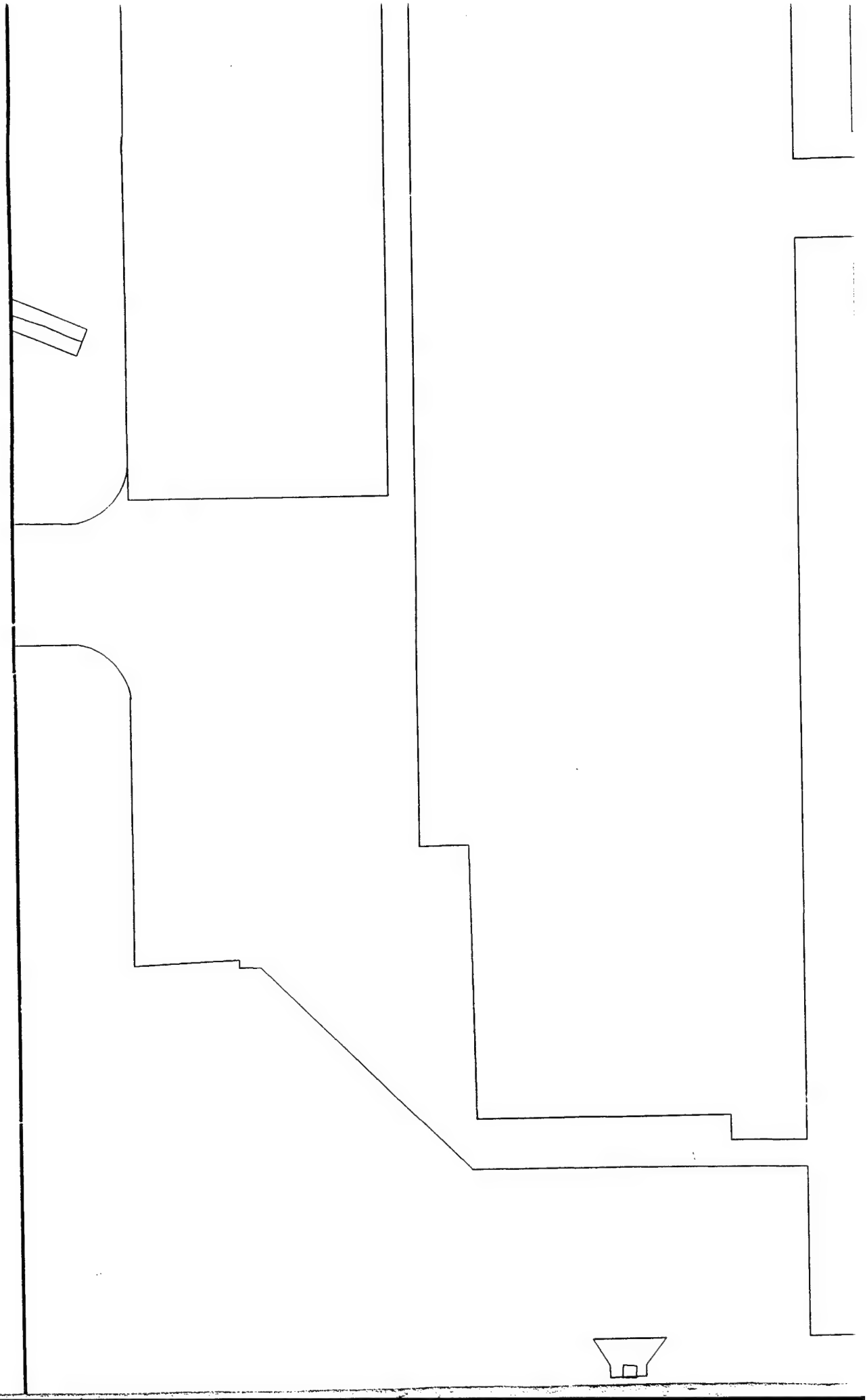
TABLE B-1 (CONTINUED): WASTEWATER ANALYTICAL AND PRESERVATION METHODS

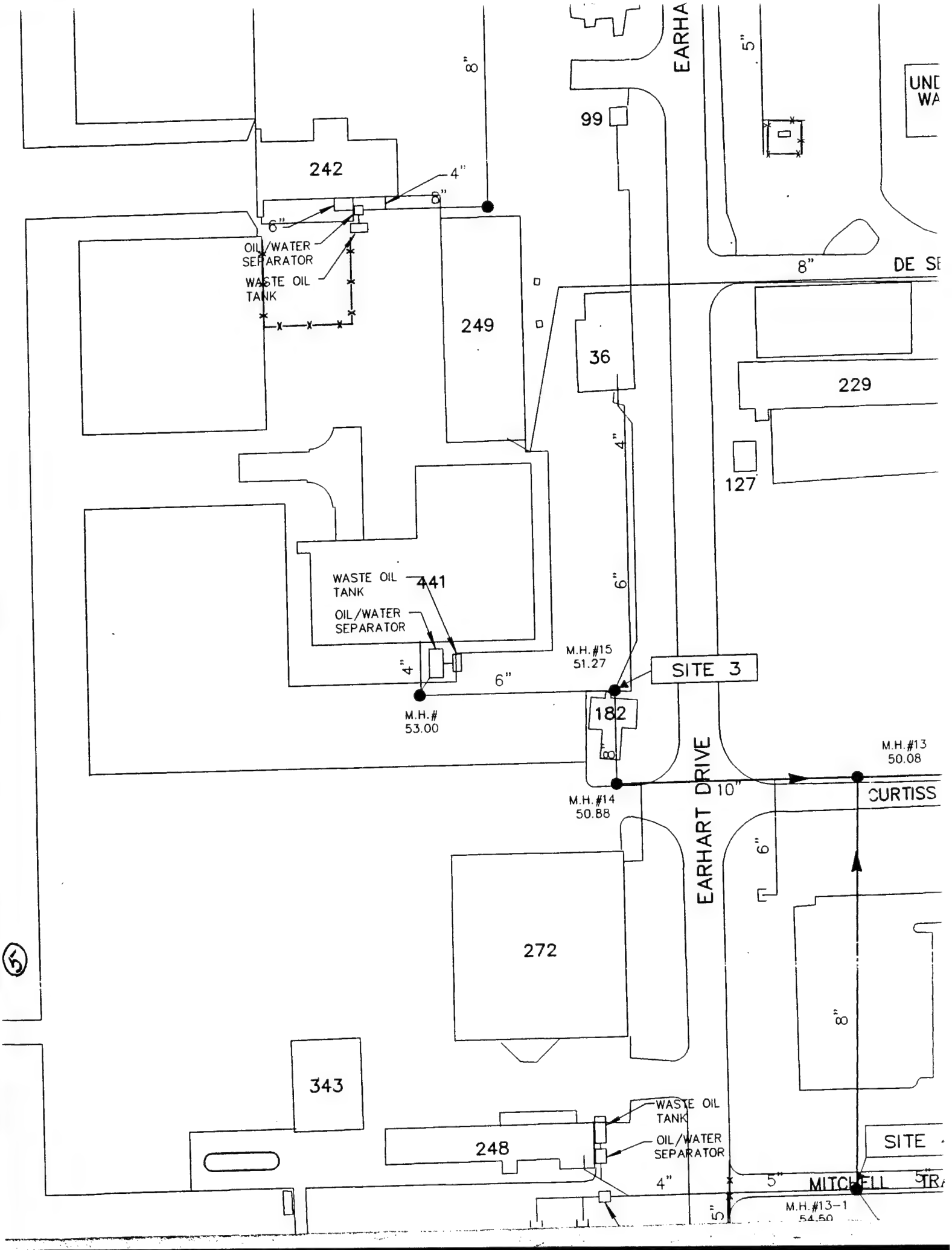
PARAMETER	EPA METHOD	PRESERVATION	HOLDING TIME (days)
Residue, Total	160.3	None	28
Residue, Filterable	160.1	None	28
Residue, Nonfilterable	160.2	None	28
Residue, Settleable	160.5	None	28
Residue, Total Volatile	160.4	None	28
Surfactants-MBAs	425.1	4°C	2
Purgeable Halocarbons	602	4°C	14
Purgeable Aromatic Volatiles	601	4°C	14
Base/Neutral Acids	625	4°C	14
Pesticides/PCBs	608	4°C	14
Herbicides	615	4°C	14

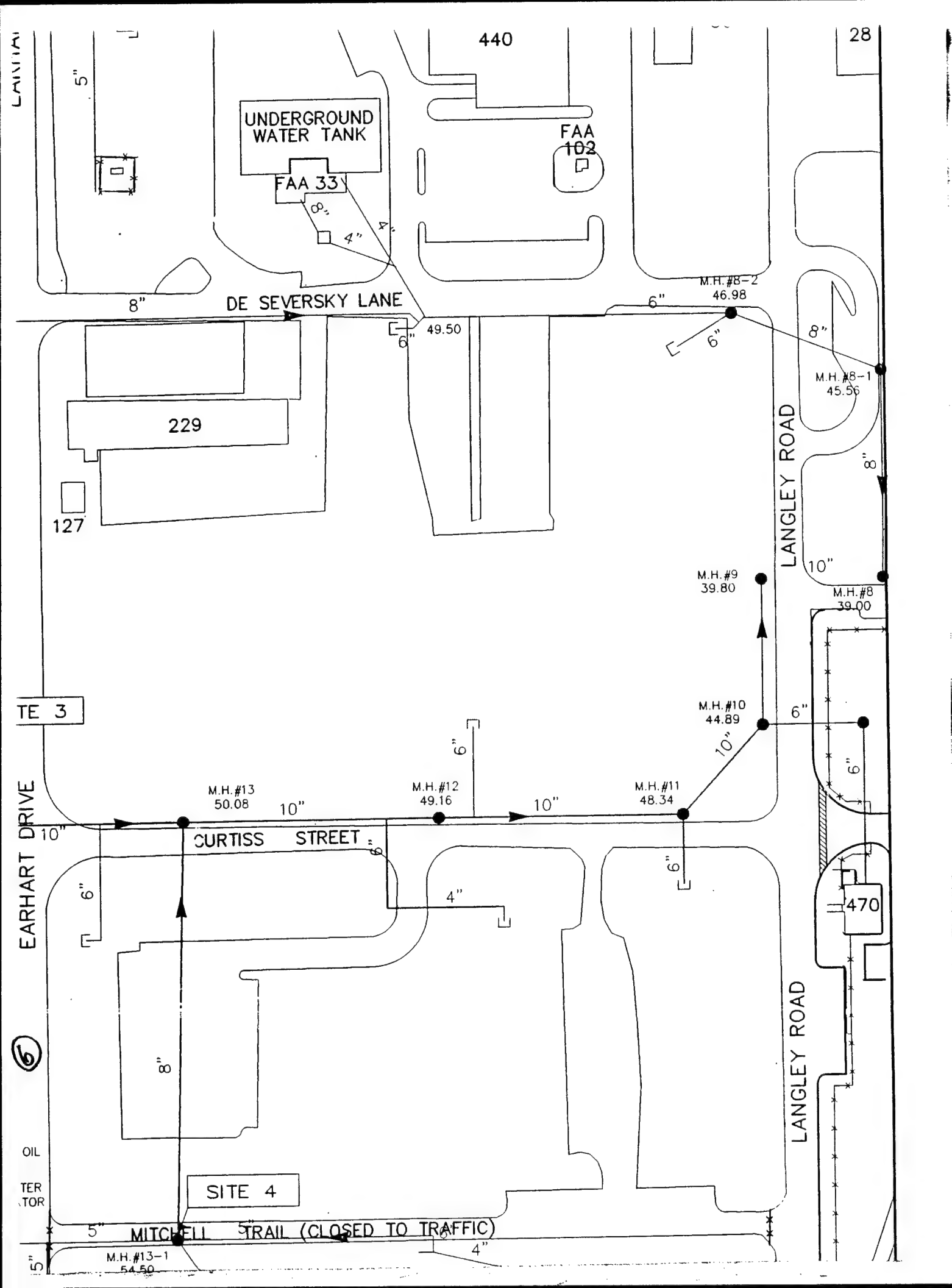

Z
TAXIWAY H


M.H.#6-12
55.81
FROM MUNICIPAL
AIR TERMINAL
LIFT STATION
(ABANDONED)
8"
FAA
100A
FAA
100B
137
WHITTLE WAY
M.H.#6-11
54.97
8"
5"
5"
6"
400
M.H.#6-10
54.67
241
FAA
149
8"
4"
6"
8"
M.H.#6-9A
54.41
8"
M.H.#6-9
52.81
6"
52
6"
4"
5"
5"
8"
6"
5"
OIL/WATER
SEPARATOR
WASTE OIL
TANK
SITE 2
5"
8"
M.H.#6-
48.16
M.H.#6-8
50.29
246
8"
5"
5"
5"
4"
4"
8"
40
EARHART DRIVE
8"
5"
5"
99
UN
W

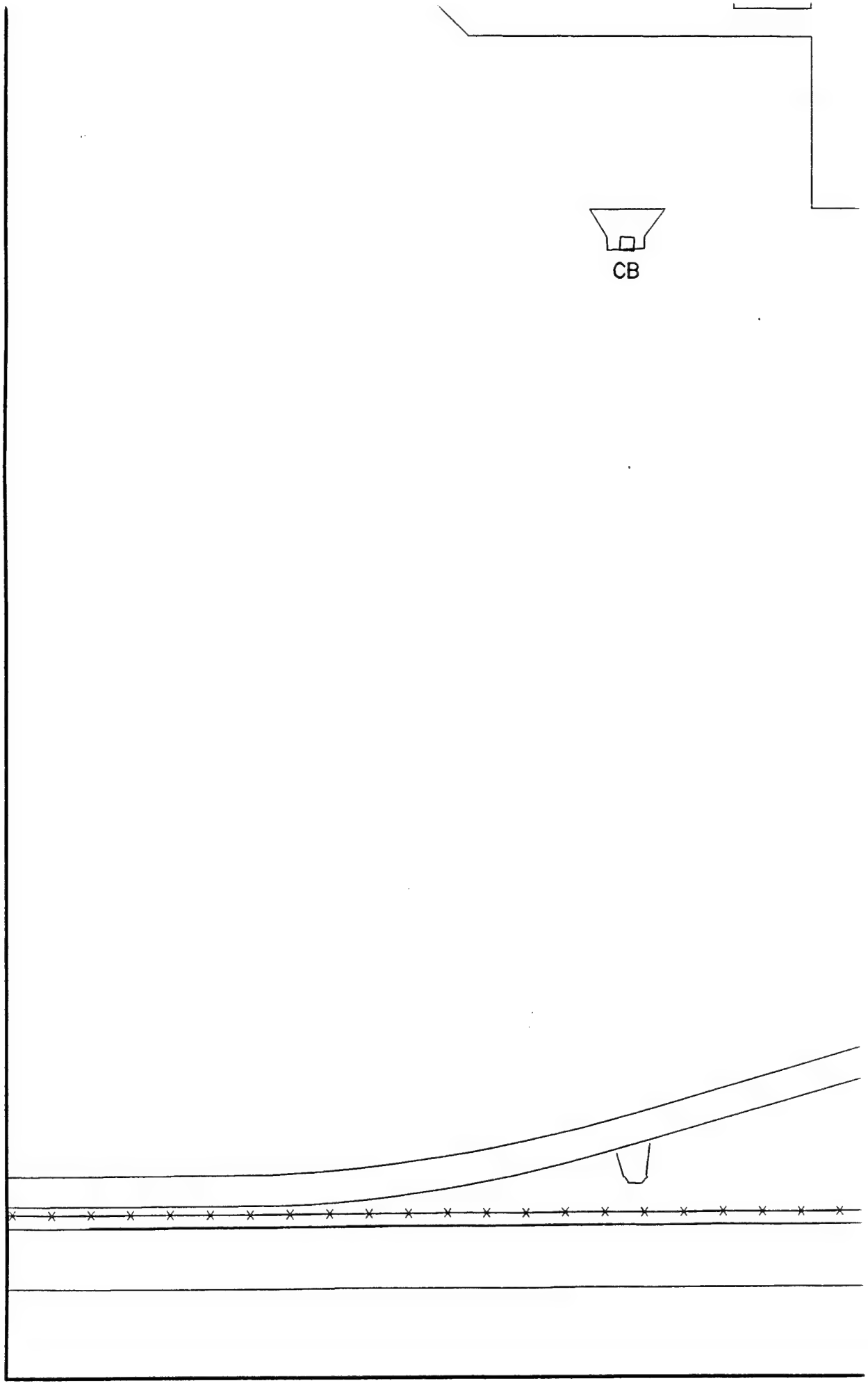

3
FAA 100A
FAA 100B
FAA 100C
219
WHITTLE WAY
11
FAA 149
BYRD HIGHWAY
2"
4"
4"
52
4"
WHITTLE WAY
FAA 56
4"
6"
ITE 2
5"
8"
M.H.#6-7
48.16
8"
6"
8"
5"
8"
6"
5"
5"
4"
M.H.#6-6
46.00
WRIGHT AVENUE
M.H.#6-5
43.88
5"
5"
440
30
FAA 28
UNDERGROUND WATER TANK
FAA 102

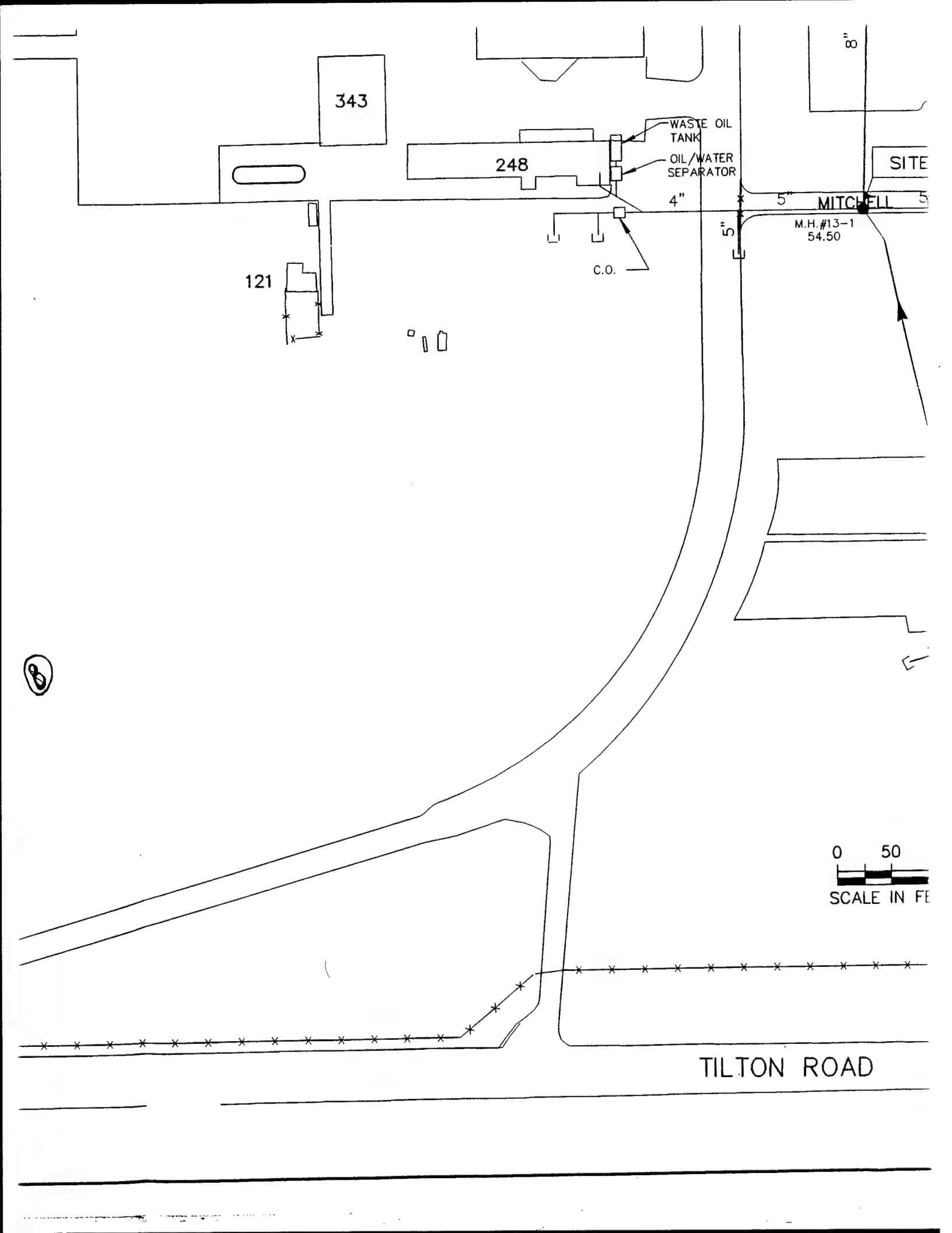


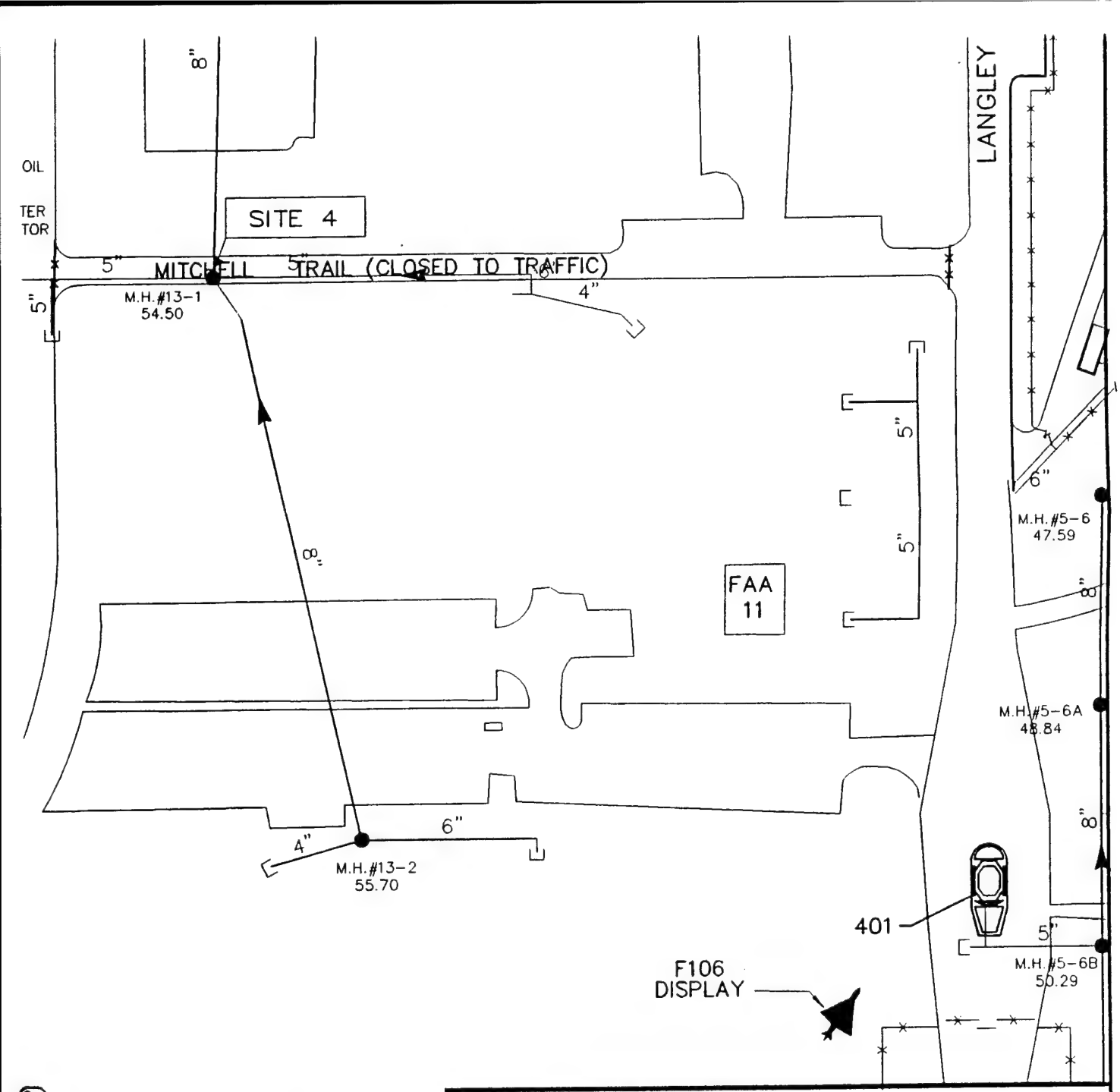

EARHA
5"
UNI
WA
99
8"
242
4"
8"
6"
OIL/WATER SEPARATOR
WASTE OIL TANK
249
DE SE
36
229
127
4"
WASTE OIL TANK
441
OIL/WATER SEPARATOR
6"
4"
6"
M.H.#15
51.27
SITE 3
M.H.#
53.00
182
8"
M.H.#13
50.08
M.H.#14
50.88
10"
CURTISS
EARHART DRIVE
6"
272
8"
343
WASTE OIL TANK
248
OIL/WATER SEPARATOR
SITE
4"
5"
MITCHELL
5"
M.H.#13-1
54.50
5"


440
28
UNDERGROUND WATER TANK
FAA 33
FAA 102
DE SEVERSKY LANE
8"
6"
49.50
M.H.#8-2
46.98
M.H.#8-1
45.56
229
127
LANGLEY ROAD
M.H.#9
39.80
M.H.#8
39.00
M.H.#10
44.89
M.H.#13
50.08
M.H.#12
49.16
M.H.#11
48.34
10"
CURTISS STREET
EARHART DRIVE
470
SITE 4
MITCHELL TRAIL (CLOSED TO TRAFFIC)
M.H.#13-1
54.50
OIL
TER
TOR

(7)




343
248
121
WASTE OIL TANK
OIL/WATER SEPARATOR
4"
5"
MITCHELL
M.H.#13-1
54.50
C.O.
SITE
0
50
SCALE IN FE
TILTON ROAD



(9)

0 50 100

SCALE IN FEET

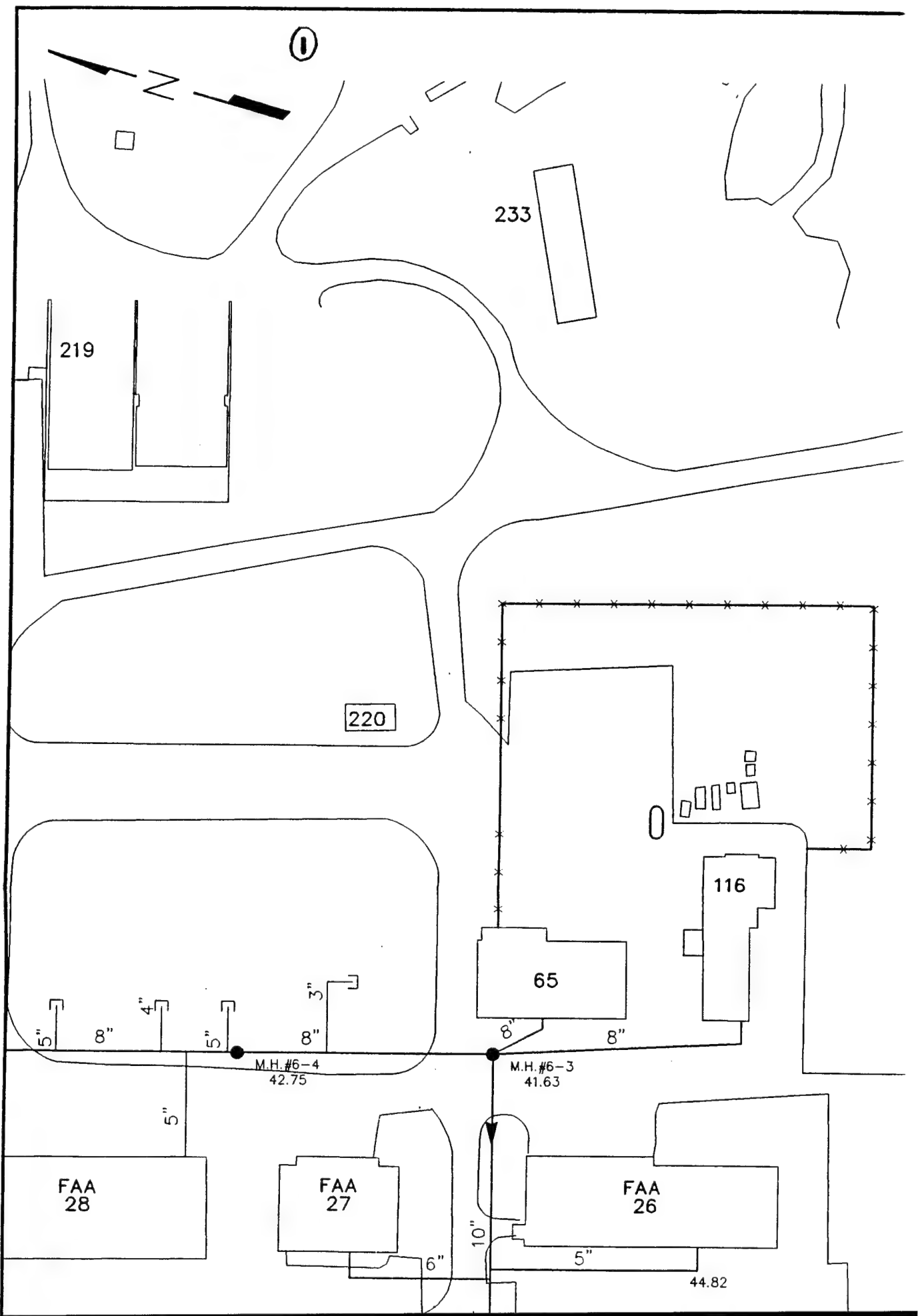
LTON ROAD

ARMSTRONG LABORATORY
OCCUPATIONAL AND HEALTH
DIRECTORATE/WATER BRANCH

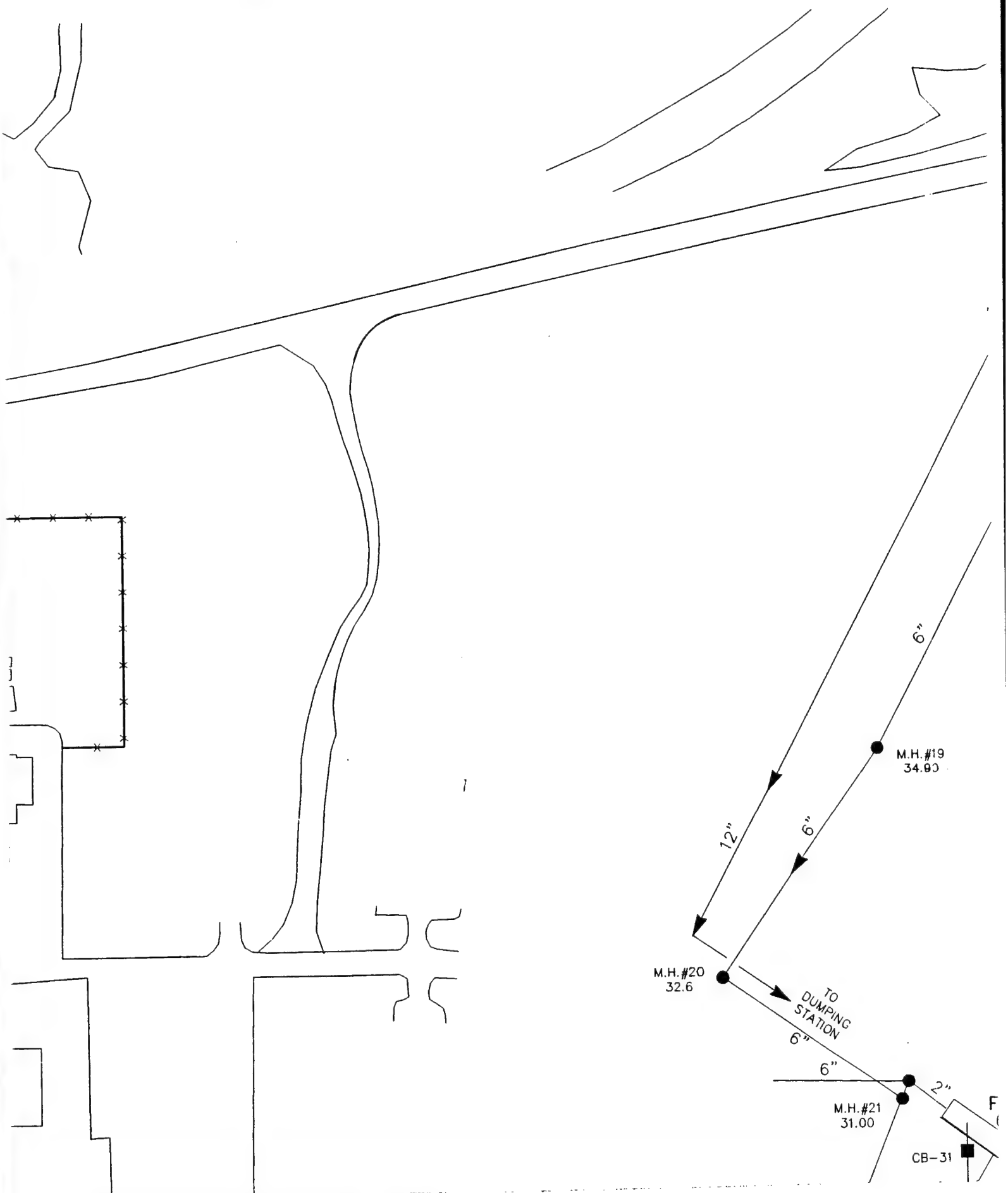
FIGURE B-1

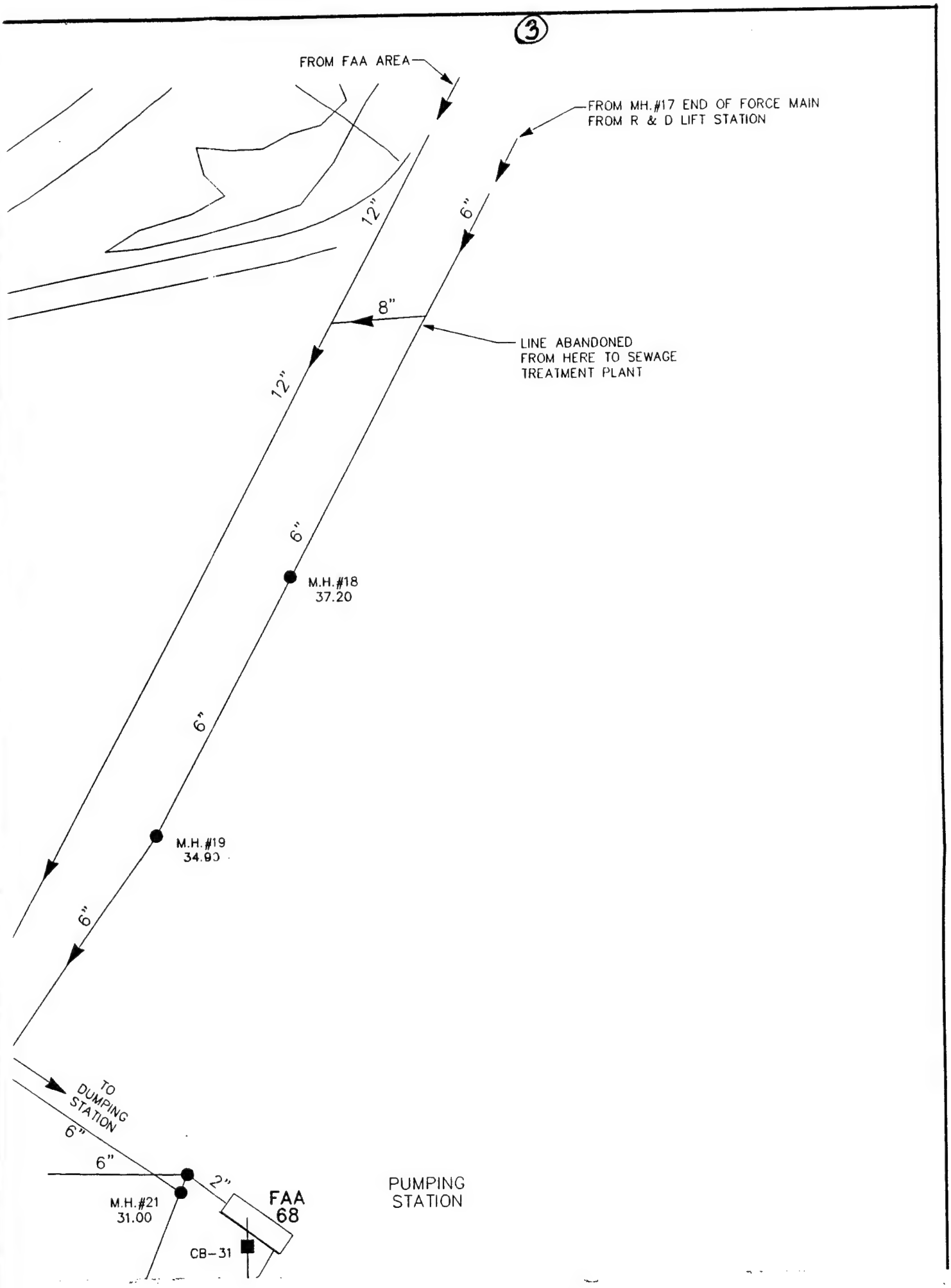
SANITARY SEWER SYSTEM
NORTH MAP

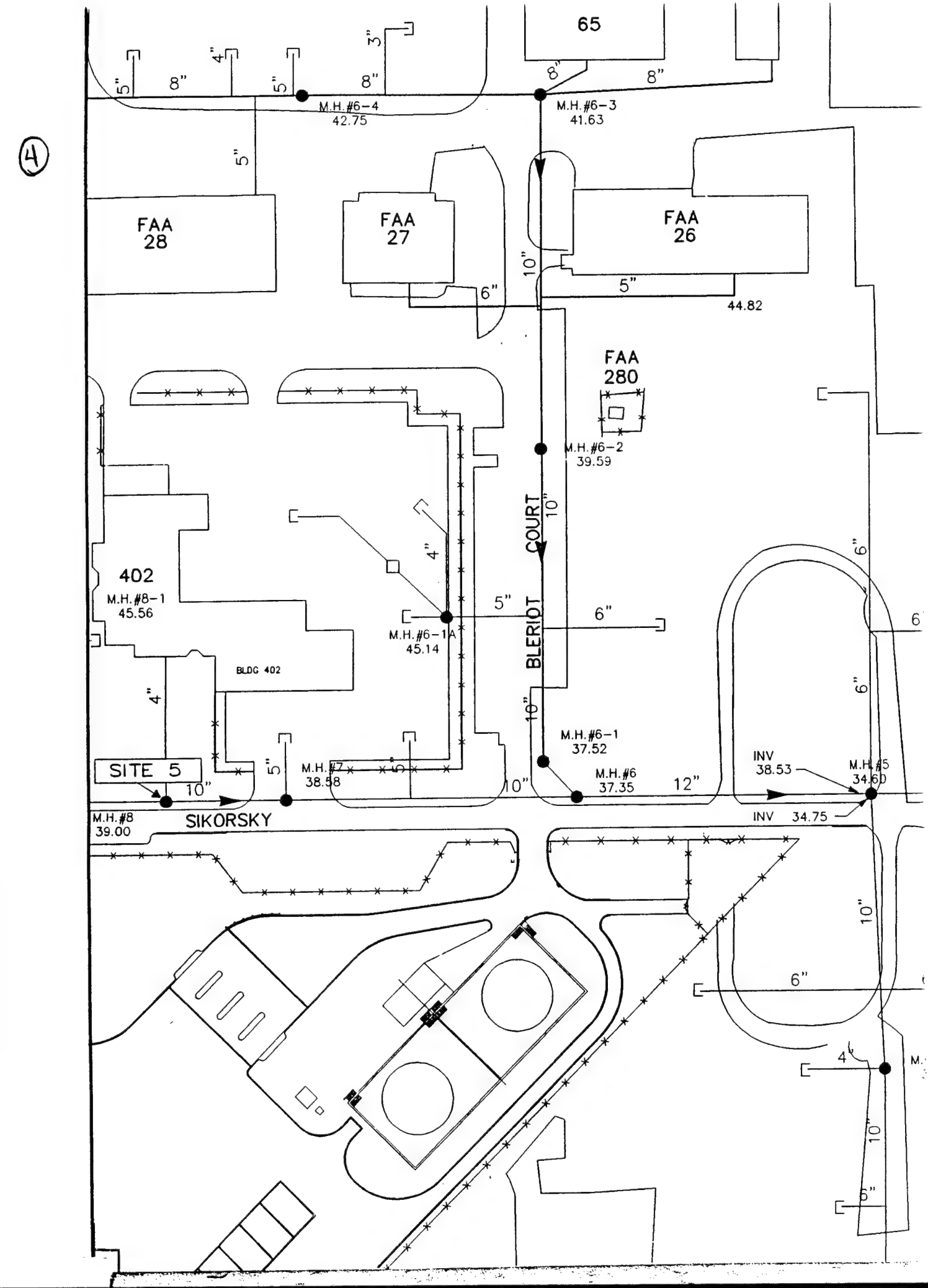
ATLANTIC CITY AIR NATIONAL GUARD BASE
ATLANTIC CITY, NEW JERSEY


N
233
219
220
116
65
FAA
28
FAA
27
FAA
26
5"
8"
4"
5"
8"
3"
8"
8"
M.H.#6-4
42.75
M.H.#6-3
41.63
5"
10"
6"
5"
44.82

(2)


6"
M.H.#19
34.90
12"
6"
M.H.#20
32.6
TO DUMPING STATION
6"
6"
2"
M.H.#21
31.00
CB-31


3
FROM FAA AREA
FROM MH.#17 END OF FORCE MAIN
FROM R & D LIFT STATION
12"
6"
8"
LINE ABANDONED
FROM HERE TO SEWAGE
TREATMENT PLANT
12"
6"
M.H.#18
37.20
6"
M.H.#19
34.90
6"
TO
DUMPING
STATION
6"
6"
2"
M.H.#21
31.00
FAA
68
CB-31
PUMPING
STATION


65
5"
8"
4"
5"
8"
3"
8"
8"
M.H.#6-4
42.75
M.H.#6-3
41.63
5"
FAA
28
FAA
27
FAA
26
10"
6"
5"
44.82
FAA
280
M.H.#6-2
39.59
402
M.H.#8-1
45.56
4"
5"
6"
M.H.#6-1A
45.14
BLDG 402
COURT
10"
6"
6"
4"
10"
M.H.#6-1
37.52
SITE 5
10"
5"
M.H.#7
38.58
10"
M.H.#6
37.35
12"
INV
38.53
M.H.#5
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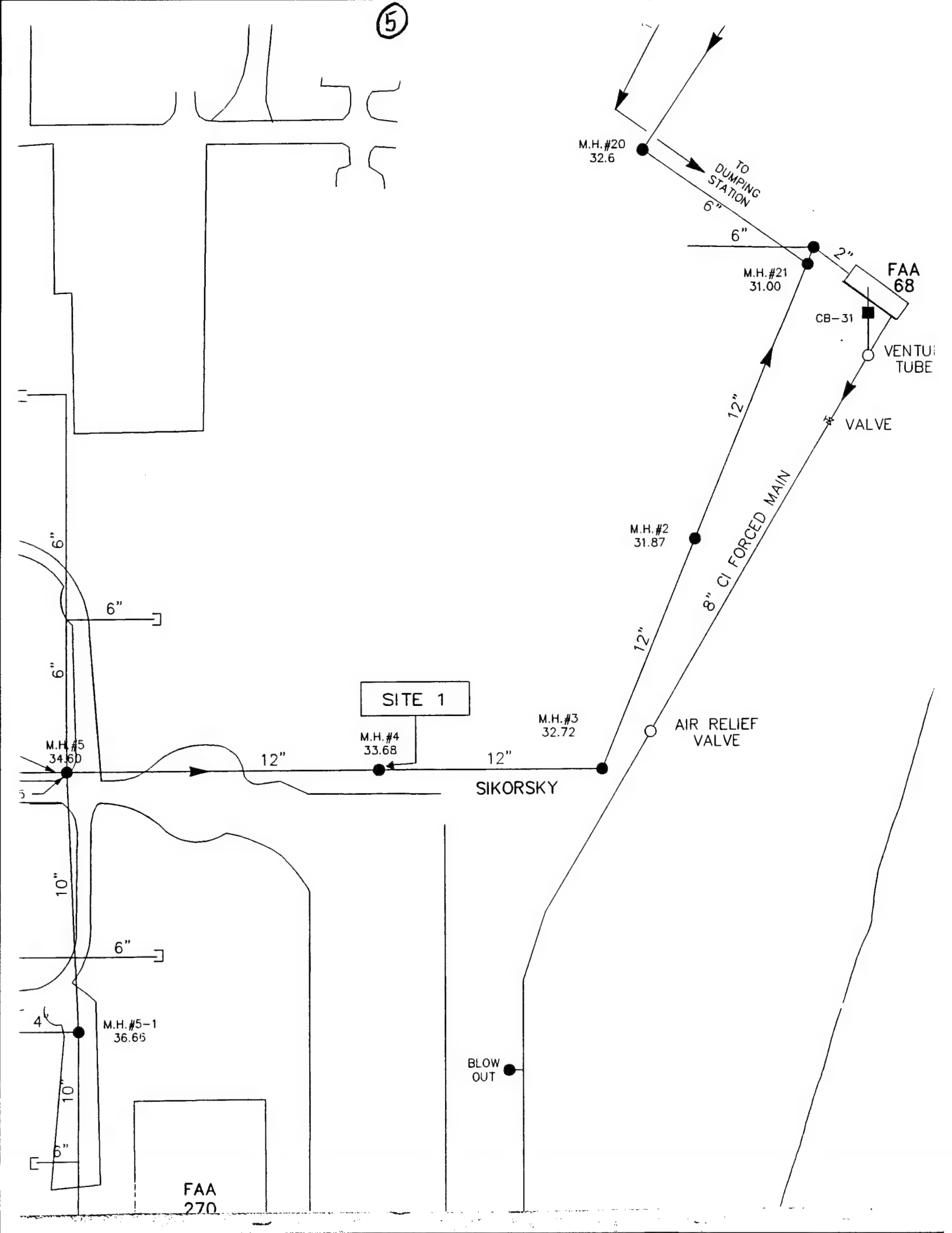
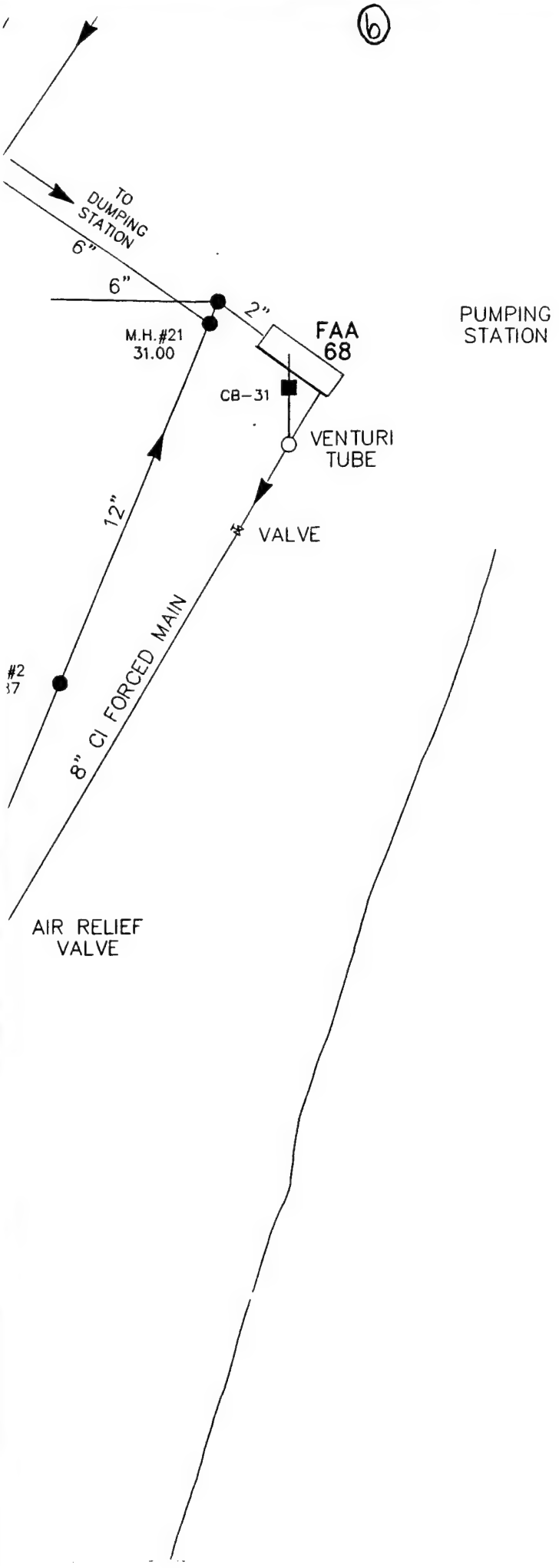
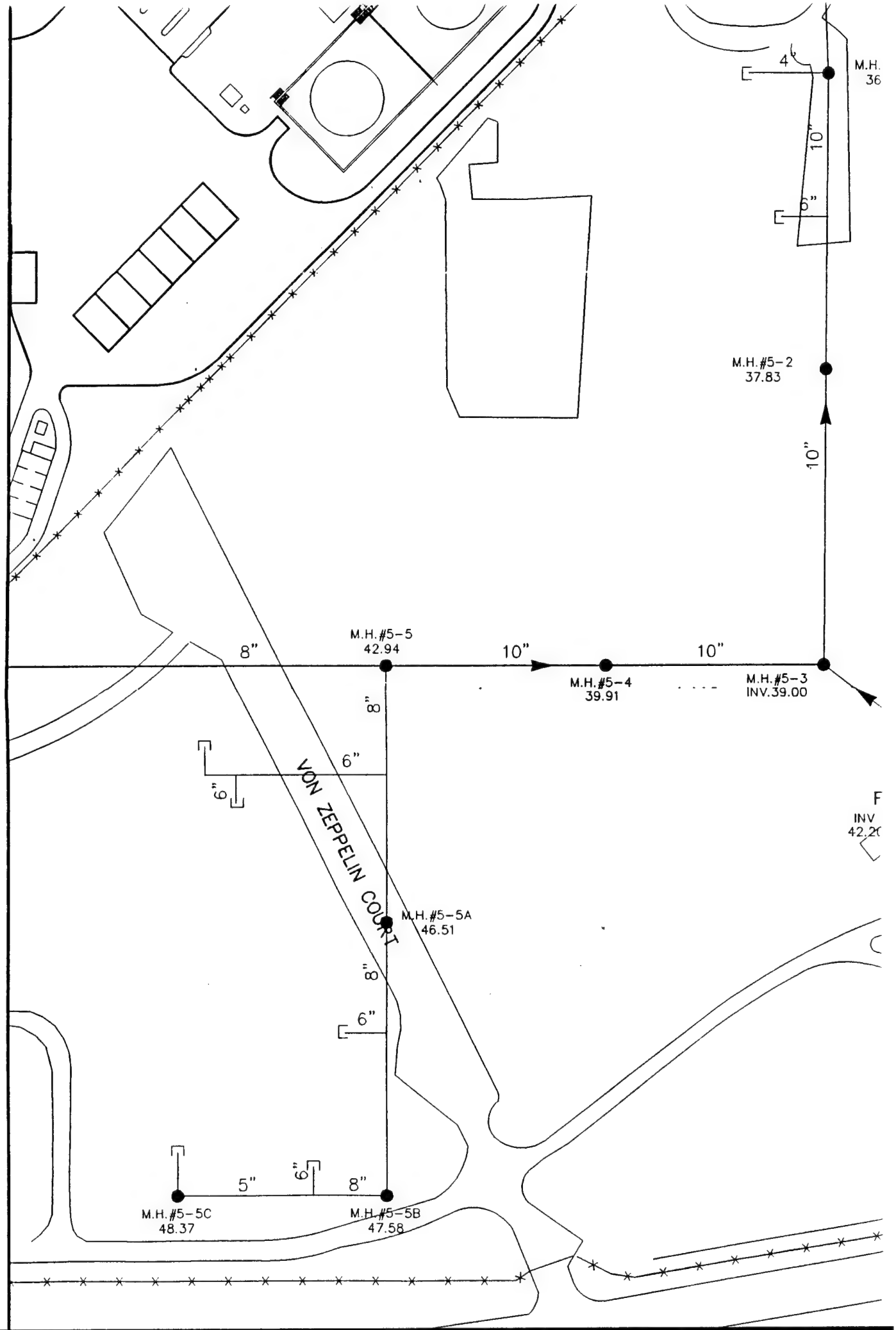
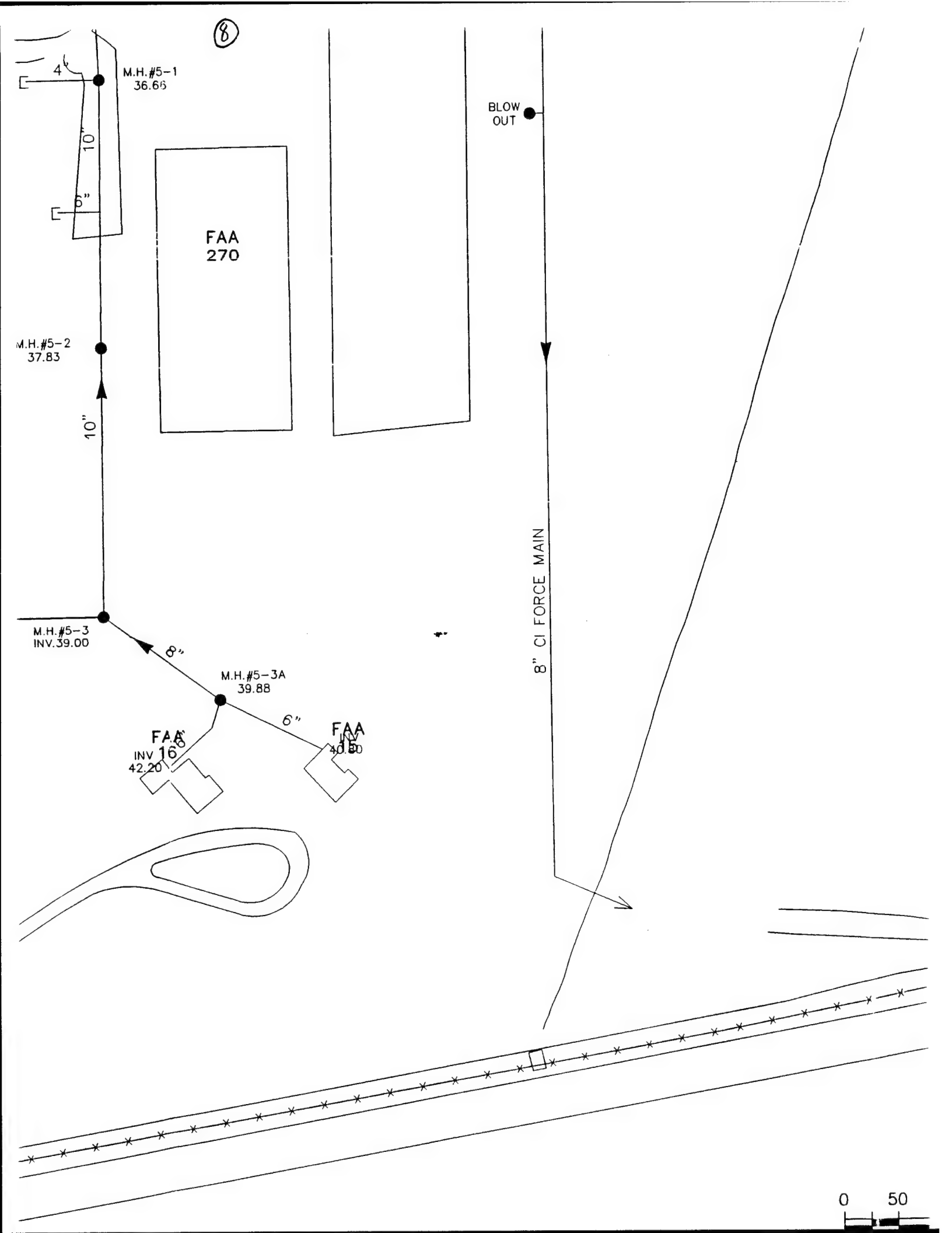
M.H.#8
39.00
SIKORSKY
INV 34.75
10"
6"
4"
10"
6"

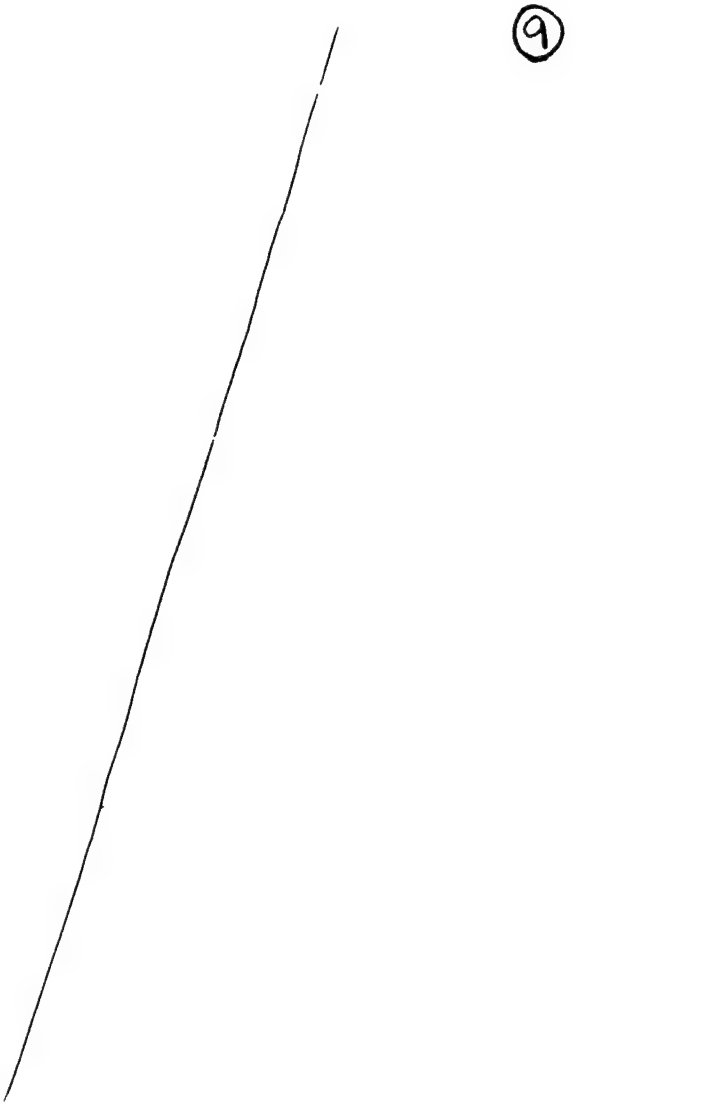

5
M.H.#20
32.6
TO DUMPING STATION
6"
6"
2"
M.H.#21
31.00
FAA
68
CB-31
VENTU
TUBE
12"
VALVE
8" CI FORCED MAIN
M.H.#2
31.87
12"
6"
6"
6"
SITE 1
M.H.#3
32.72
AIR RELIEF
VALVE
M.H.#5
34.60
12"
M.H.#4
33.68
12"
SIKORSKY
10"
6"
4"
M.H.#5-1
36.66
10"
6"
BLOW
OUT
FAA
270

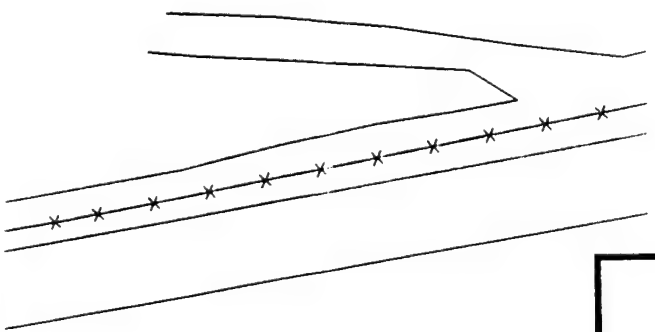
(b)


TO DUMPING STATION
6"
6"
2"
M.H.#21
31.00
FAA
68
PUMPING STATION
CB-31
VENTURI TUBE
12"
VALVE
8" CI FORCED MAIN
#2
37
AIR RELIEF VALVE


4"
M.H.
36
10"
6"
M.H.#5-2
37.83
10"
8"
M.H.#5-5
42.94
10"
10"
M.H.#5-4
39.91
M.H.#5-3
INV.39.00
8"
6"
6"
VON ZEPPELIN COURT
M.H.#5-5A
46.51
8"
6"
5"
6"
8"
M.H.#5-5C
48.37
M.H.#5-5B
47.58


8
4"
M.H.#5-1
36.66
10"
6"
FAA
270
BLOW
OUT
M.H.#5-2
37.83
10"
8" CI FORCE MAIN
M.H.#5-3
INV.39.00
8"
M.H.#5-3A
39.88
6"
FAA
INV
42.20
FAA
INV
40.50
0
50



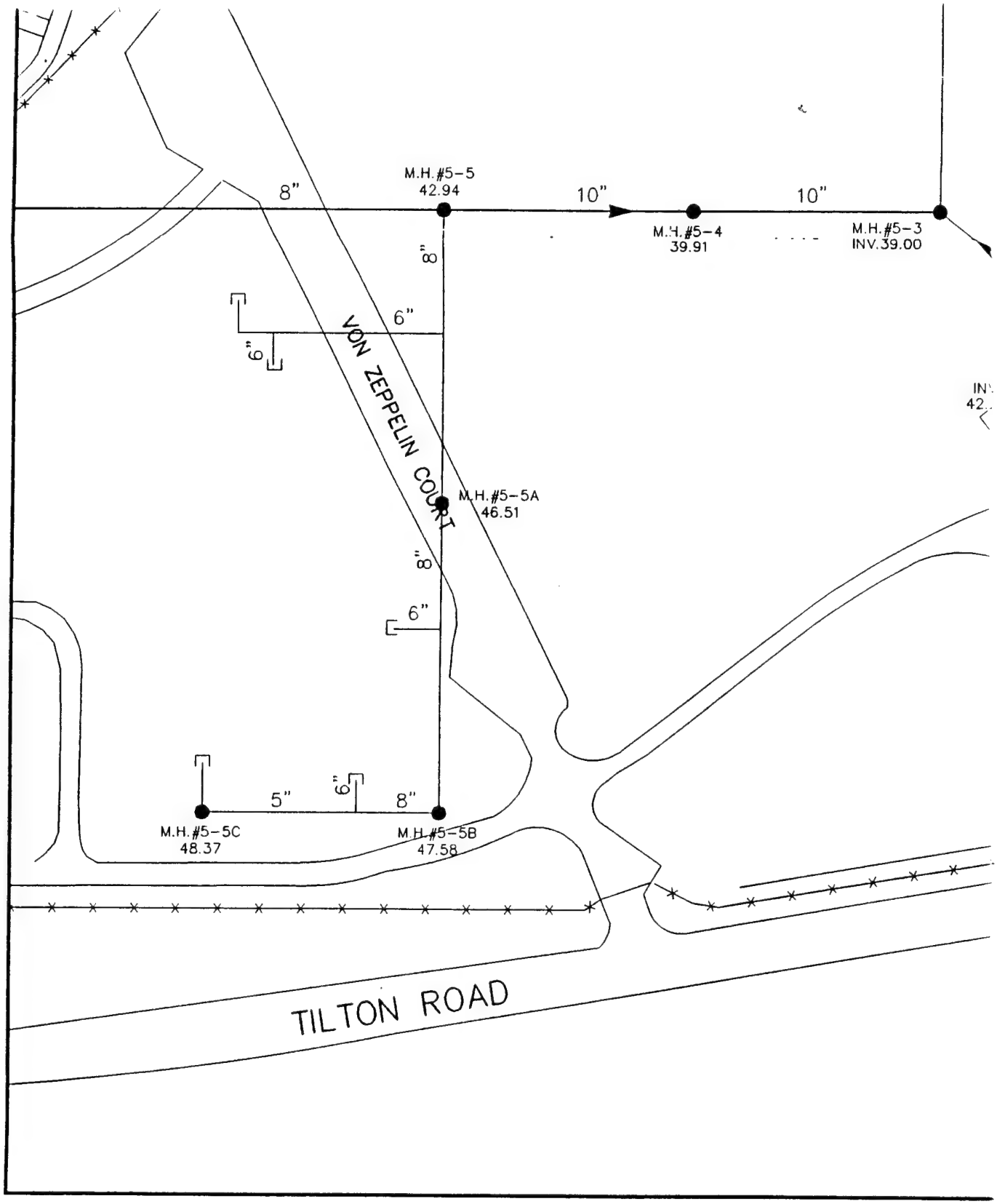


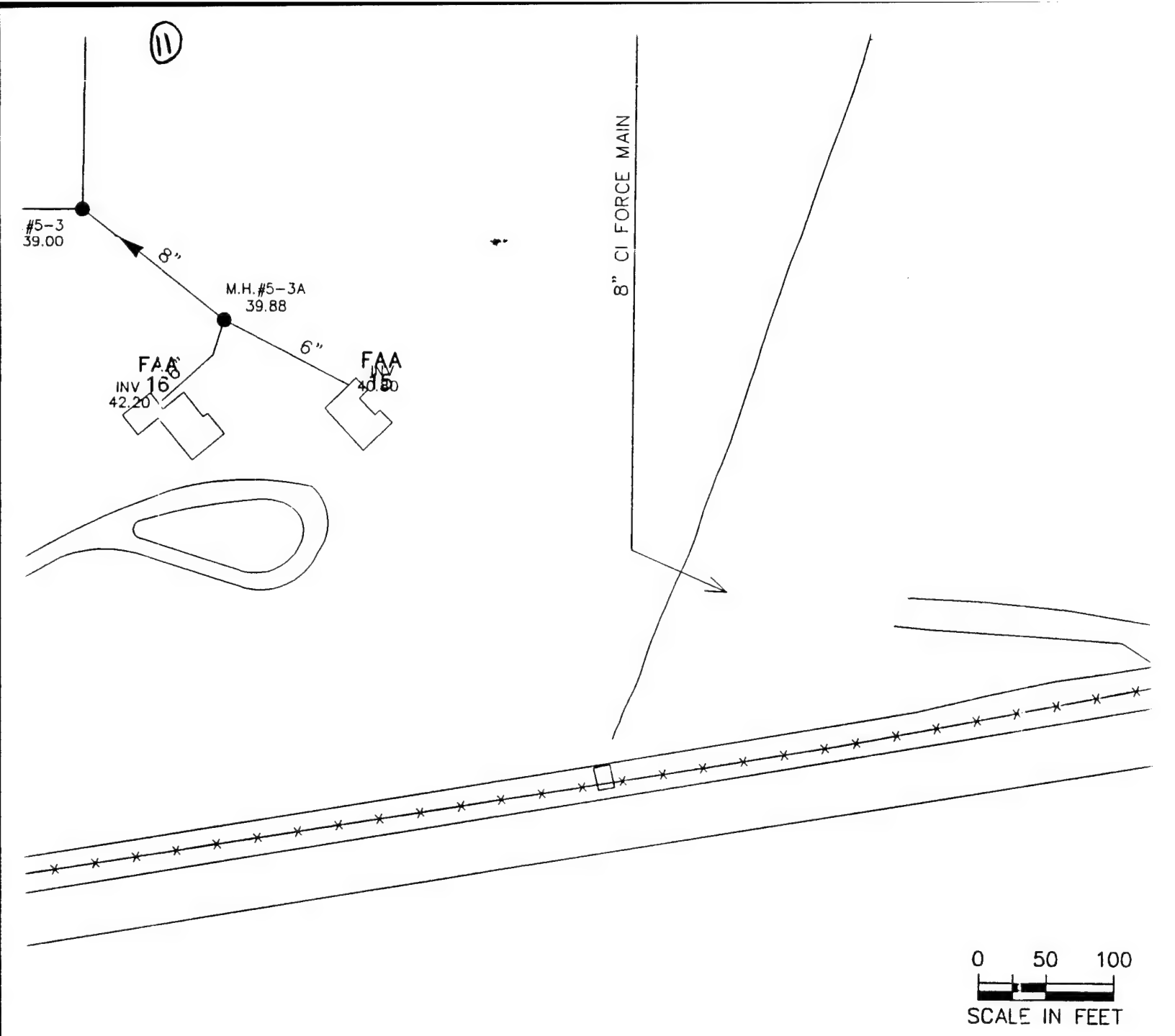
0 50 100

ARMSTRONG LABORATORY
OCCUPATIONAL AND HEALTH
DIRECTORATE/WATER BRANCH

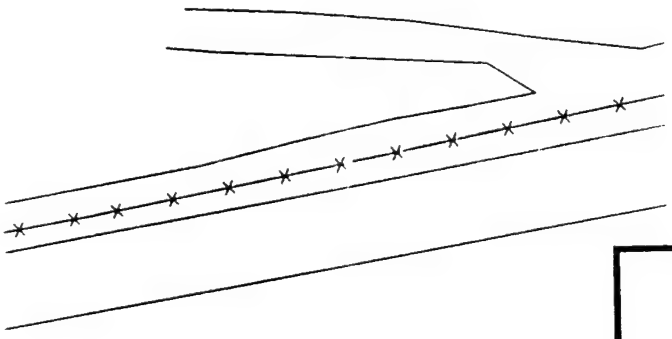
FIGURE B–2

(10)


M.H.#5-5
42.94
8"
10"
10"
M.H.#5-4
39.91
M.H.#5-3
INV.39.00
8"
6"
6"
VON ZEPPELIN COURT
M.H.#5-5A
46.51
8"
6"
5"
6"
8"
M.H.#5-5C
48.37
M.H.#5-5B
47.58
TILTON ROAD


(11)
#5-3
39.00
8"
M.H. #5-3A
39.88
6"
FAA
INV 16
42.20
FAA
INV 15
40.80
8" CI FORCE MAIN
0
50
100
SCALE IN FEET

(12)



0 50 100

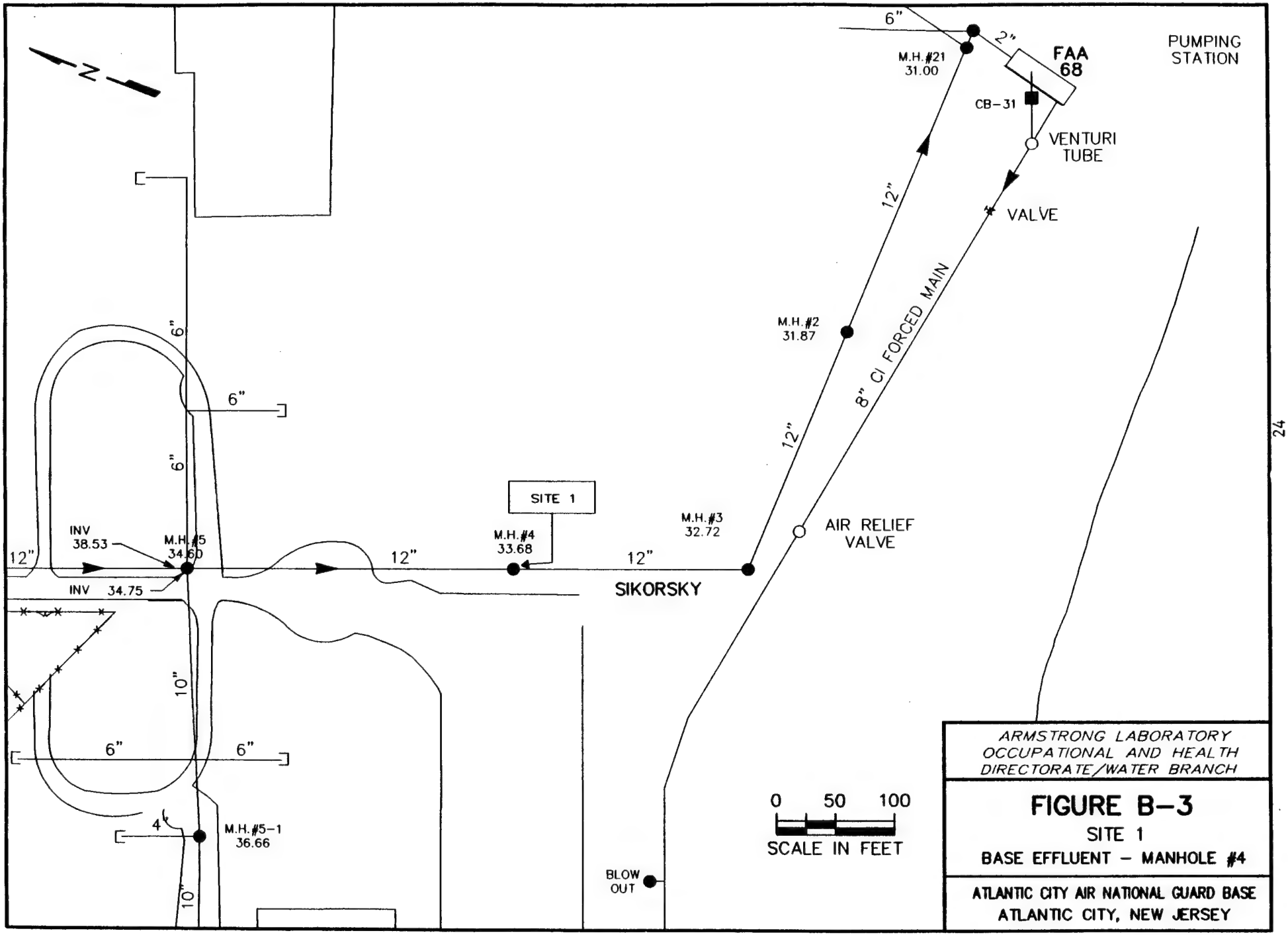
SCALE IN FEET

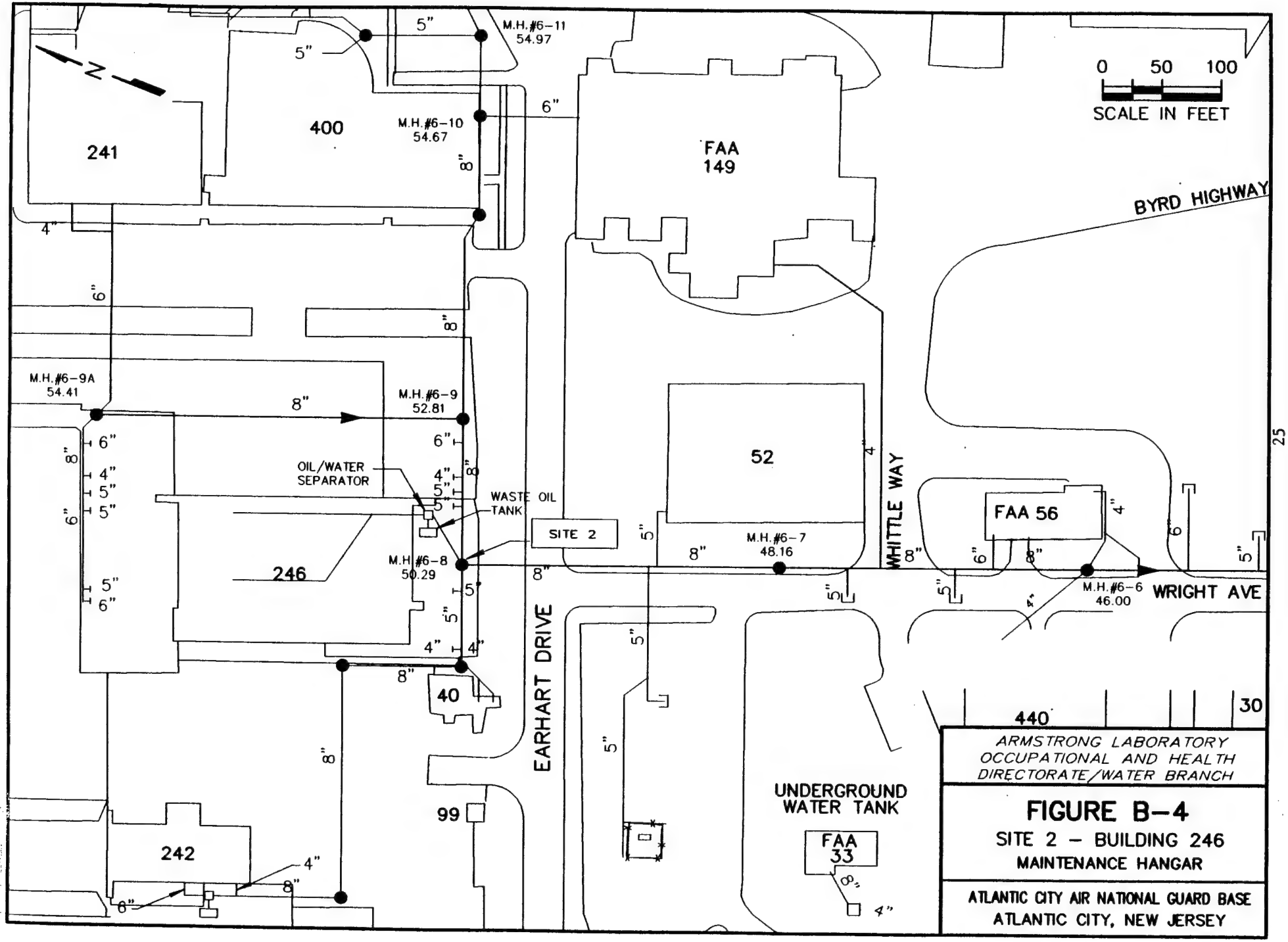
ARMSTRONG LABORATORY
OCCUPATIONAL AND HEALTH
DIRECTORATE/WATER BRANCH

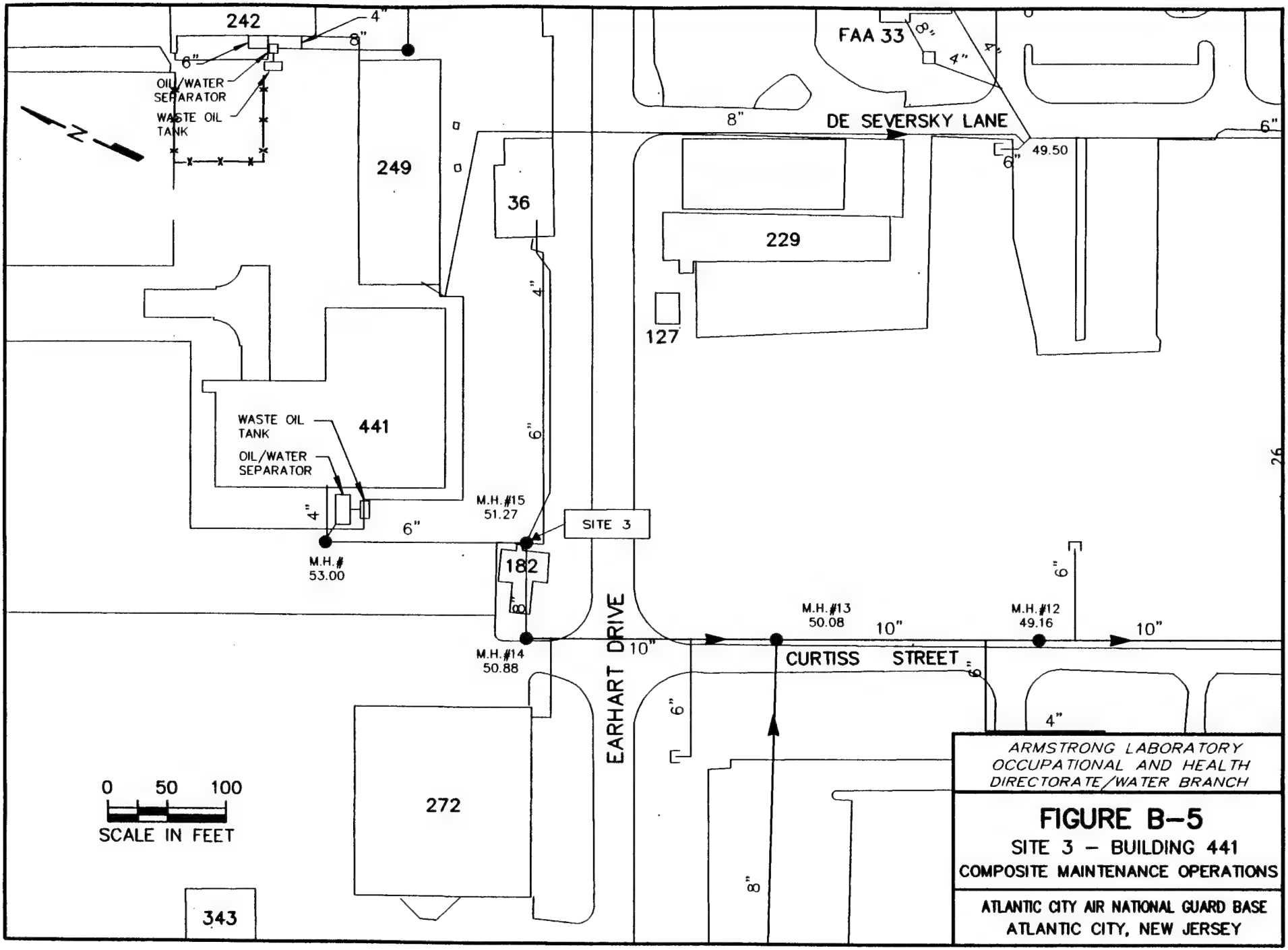
FIGURE B-2

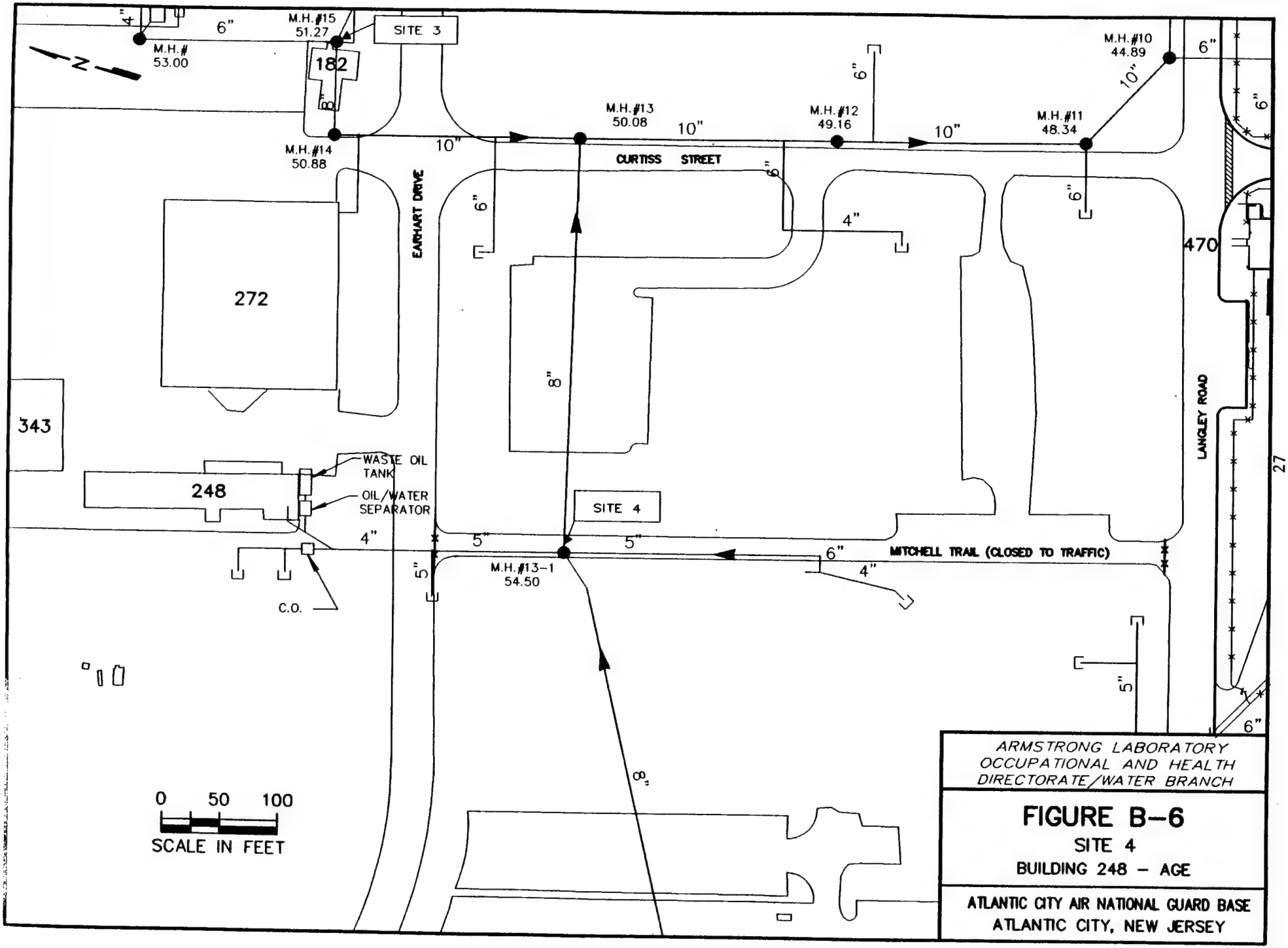
SANITARY SEWER SYSTEM
SOUTH MAP

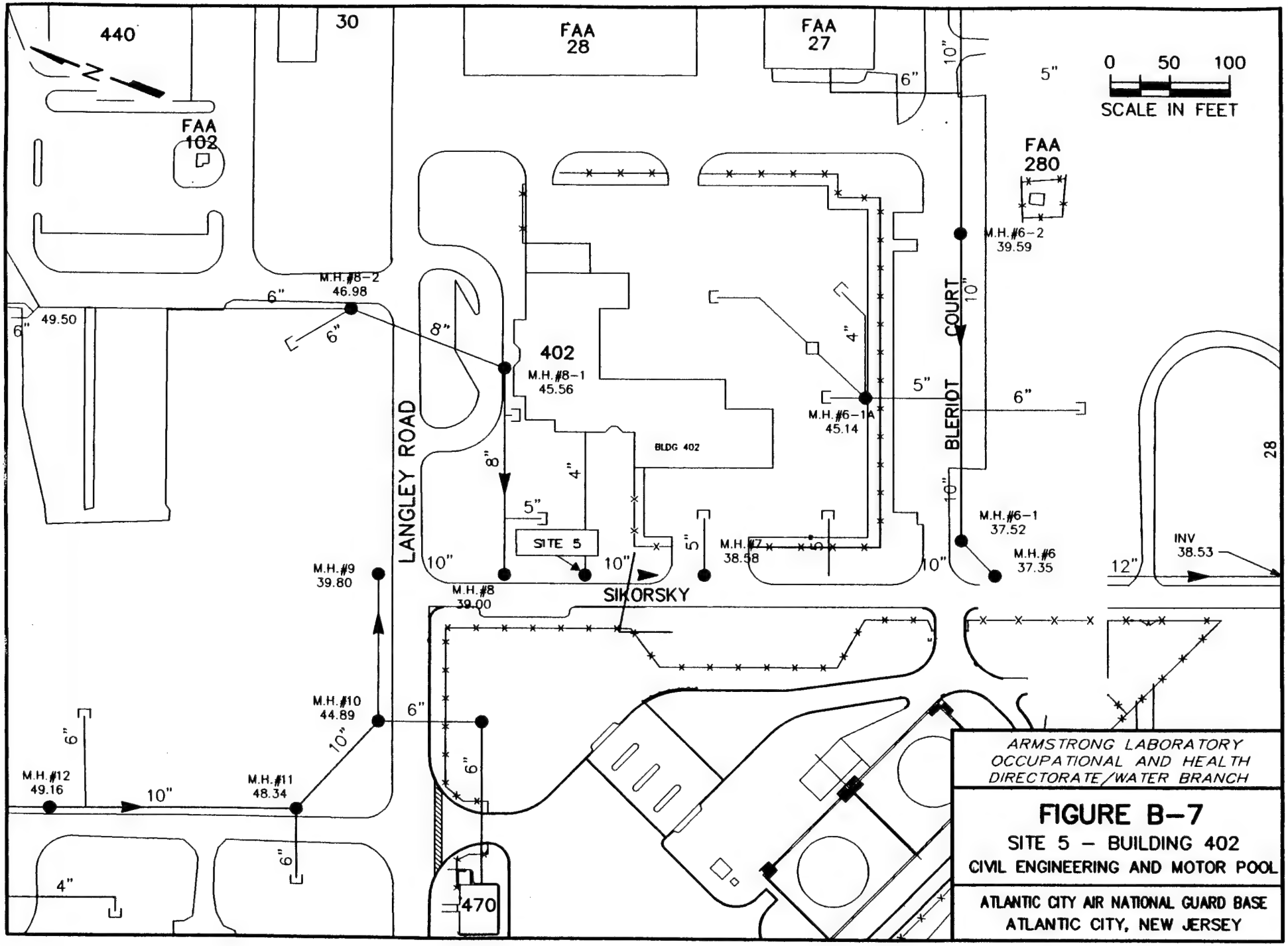
ATLANTIC CITY AIR NATIONAL GUARD BASE
ATLANTIC CITY, NEW JERSEY


N
6"
2"
M.H.#21
31.00
FAA
68
PUMPING
STATION
CB-31
VENTURI
TUBE
12"
VALVE
8" CI FORCED MAIN
M.H.#2
31.87
12"
6"
6"
6"
SITE 1
INV
38.53
M.H.#5
34.60
M.H.#4
33.68
M.H.#3
32.72
AIR RELIEF
VALVE
12"
12"
12"
INV 34.75
SIKORSKY
10"
6"
6"
4"
M.H.#5-1
36.66
10"
BLOW
OUT
0 50 100
SCALE IN FEET
ARMSTRONG LABORATORY
OCCUPATIONAL AND HEALTH
DIRECTORATE/WATER BRANCH
FIGURE B-3
SITE 1
BASE EFFLUENT - MANHOLE #4
ATLANTIC CITY AIR NATIONAL GUARD BASE
ATLANTIC CITY, NEW JERSEY


N
0 50 100
SCALE IN FEET
241
400
FAA 149
52
FAA 56
FAA 33
246
242
40
99
440
M.H.#6-11 54.97
M.H.#6-10 54.67
M.H.#6-9A 54.41
M.H.#6-9 52.81
M.H.#6-8 50.29
M.H.#6-7 48.16
M.H.#6-6 46.00
OIL/WATER SEPARATOR
WASTE OIL TANK
SITE 2
BYRD HIGHWAY
WHITTLE WAY
EARHART DRIVE
WRIGHT AVE
UNDERGROUND WATER TANK
ARMSTRONG LABORATORY
OCCUPATIONAL AND HEALTH
DIRECTORATE/WATER BRANCH
FIGURE B-4
SITE 2 – BUILDING 246
MAINTENANCE HANGAR
ATLANTIC CITY AIR NATIONAL GUARD BASE
ATLANTIC CITY, NEW JERSEY


242
4"
8"
6"
OIL/WATER SEPARATOR
WASTE OIL TANK
N
249
36
FAA 33
8"
4"
8"
DE SEVERSKY LANE
6"
6"
49.50
229
127
4"
6"
WASTE OIL TANK
441
OIL/WATER SEPARATOR
4"
6"
M.H.#15
51.27
SITE 3
M.H.#
53.00
182
8"
M.H.#13
50.08
10"
M.H.#12
49.16
10"
M.H.#14
50.88
10"
CURTISS STREET
EARHART DRIVE
6"
6"
6"
4"
8"
272
0 50 100
SCALE IN FEET
343
ARMSTRONG LABORATORY
OCCUPATIONAL AND HEALTH
DIRECTORATE/WATER BRANCH
FIGURE B-5
SITE 3 – BUILDING 441
COMPOSITE MAINTENANCE OPERATIONS
ATLANTIC CITY AIR NATIONAL GUARD BASE
ATLANTIC CITY, NEW JERSEY


M.H.# 53.00
6"
M.H.#15 51.27
SITE 3
182
M.H.#14 50.88
M.H.#13 50.08
M.H.#12 49.16
M.H.#11 48.34
M.H.#10 44.89
10"
CURTISS STREET
EARHART DRIVE
LANGLEY ROAD
272
343
248
470
WASTE OIL TANK
OIL/WATER SEPARATOR
SITE 4
M.H.#13-1 54.50
MITCHELL TRAIL (CLOSED TO TRAFFIC)
C.O.
4"
5"
6"
8"
27
0 50 100
SCALE IN FEET
ARMSTRONG LABORATORY
OCCUPATIONAL AND HEALTH
DIRECTORATE/WATER BRANCH
FIGURE B-6
SITE 4
BUILDING 248 - AGE
ATLANTIC CITY AIR NATIONAL GUARD BASE
ATLANTIC CITY, NEW JERSEY


440
30
FAA 28
FAA 27
FAA 102
FAA 280
0 50 100
SCALE IN FEET
N
M.H.#8-2
46.98
49.50
402
M.H.#8-1
45.56
LANGLEY ROAD
BLDG 402
SITE 5
M.H.#6-2
39.59
M.H.#6-1A
45.14
BLERIOT COURT
M.H.#6-1
37.52
M.H.#6
37.35
M.H.#7
38.58
INV
38.53
28
M.H.#9
39.80
M.H.#8
39.00
SIKORSKY
M.H.#10
44.89
M.H.#12
49.16
M.H.#11
48.34
470
ARMSTRONG LABORATORY
OCCUPATIONAL AND HEALTH
DIRECTORATE/WATER BRANCH
FIGURE B-7
SITE 5 – BUILDING 402
CIVIL ENGINEERING AND MOTOR POOL
ATLANTIC CITY AIR NATIONAL GUARD BASE
ATLANTIC CITY, NEW JERSEY

APPENDIX C
QUALITY ASSURANCE/QUALITY CONTROL SAMPLING RESULTS

TABLE C-1: EQUIPMENT BLANK SAMPLE ANALYTICAL RESULTS
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		EQUIPMENT BLANK 1	EQUIPMENT BLANK 2			EQUIPMENT BLANK 2
		12-Sep-95	12-Sep-95			12-Sep-95
GROUP A & B ANALYTES	UNITS	Tuesday	Tuesday	BASE/NEUTRAL ACIDS	UNITS	Tuesday
Chemical Oxygen Demand	mg/l	<10	<10	Acenaphthene	ug/l	<5
Oil and Grease	mg/l	NR**	0.8	Acenaphthylene	ug/l	<5
Total Petroleum Hydrocarbon	mg/l	NR	<1	Anthracene	ug/l	<5
				Aroclor 1260	ug/l	<5
GROUP D ANALYTES				Benzidine	ug/l	<5
Cyanide (Total)	mg/l	<0.005	<0.005	Benzo(a)anthracene	ug/l	<5
				Benzo(b)fluoranthene	ug/l	<5
GROUP E ANALYTES				Benzo(k)fluoranthene	ug/l	<5
Phenols	ug/l	<10	<10	Benzo(ghi)perylene	ug/l	<5
				Benzyl butyl phthalate	ug/l	<5
METALS				Bis(2-chloroethyl)ether	ug/l	<5
GROUP F ANALYTES				Bis(2-chloroethoxy)methane	ug/l	<5
Aluminum	mg/l	<0.030	<0.030	Bis(2-ethylhexyl)phthalate	ug/l	<5
Antimony	mg/l	<0.005	<0.005	Bis(2-chloroisopropyl)ether	ug/l	<5
Arsenic	mg/l	<0.005	<0.005	4-Bromophenyl phenyl ether	ug/l	<5
Barium	mg/l	<0.050	<0.050	Butylbenzyl Phthalate	ug/l	12.3
Beryllium	mg/l	<0.001	<0.001	2-Chloronaphthalene	ug/l	<5
Cadmium	mg/l	<0.001	<0.001	4-Chlorophenyl phenyl ether	ug/l	<5
Total Chromium	mg/l	<0.010	<0.010	Chrysene	ug/l	<5
Cobalt	mg/l	<0.050	<0.050	Dibenzo(a,h)anthracene	ug/l	<5
Copper	mg/l	<0.020	<0.020	Di-n-butylphthalate	ug/l	<5
Iron	mg/l	<0.030	<0.030	1,2-Dichlorobenzene	ug/l	<5
Lead	mg/l	<0.001	<0.001	1,3-Dichlorobenzene	ug/l	<5
Manganese	mg/l	<0.030	<0.030	1,4-Dichlorobenzene	ug/l	<5
Mercury	mg/l	<0.0002	<0.0002	3,3-Dichlorobenzidine	ug/l	<5
Molybdenum	mg/l	<0.030	<0.030	Diethyl phthalate	ug/l	10.7
Nickel	mg/l	<0.020	<0.020	Dimethyl phthalate	ug/l	<5
Selenium	mg/l	<0.005	<0.005	2,4-Dinitrotoluene	ug/l	<5
Silver	mg/l	<0.010	<0.010	2,6-Dinitrotoluene	ug/l	<5
Thallium	mg/l	<0.001	<0.001	Di-n--octyl phthalate	ug/l	<5
Titanium	mg/l	<0.050	<0.050	Fluoranthene	ug/l	<5
Vanadium	mg/l	<0.050	<0.050	Fluorene	ug/l	<5
Zinc	mg/l	<0.050	<0.050	Hexachlorobenzene	ug/l	<5

TABLE C-1 (CONTINUED): EQUIPMENT BLANK SAMPLE ANALYTICAL RESULTS
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		EQUIPMENT BLANK 1	EQUIPMENT BLANK 2			EQUIPMENT BLANK 2
		12-Sep-95	12-Sep-95			12-Sep-95
GROUP G		Tuesday	Tuesday	BASE/NEUTRAL ACIDS	UNITS	Tuesday
Residue Total	mg/l	NR	59	Hexachlorobutadiene	ug/l	<5
Residue , Filterable (TDS)	mg/l	NR	42	Hexachlorocyclopentadiene	ug/l	<5
Residue, Nonfilterable (TSS)	mg/l	NR	<0.1	Hexachloroethane	ug/l	<5
Residue, Settleable	mg/l	NR	<0.2	Indeno(1,2,3-cd)pyrene	ug/l	<5
Residue, Volatile	mg/l	NR	40	Isophorone	ug/l	<5
Sulfate	mg/l	NR	<0.1	Naphthalene	ug/l	<5
				Nitrobenzene	ug/l	<5
VOLATILE ORGANICS				N-Nitrosodimethylamine	ug/l	<5
Benzene	ug/l	NR	<5	N-Nitrosodi-n-propylamine	ug/l	<5
Benzyl Chloride	ug/l	NR	<5	N-Nitrosodiphenylamine	ug/l	<5
Bromobenzene	ug/l	NR	<5	Phenanthrene	ug/l	<5
Bromodichloromethane	ug/l	NR	<5	Pyrene	ug/l	<5
Bromoform	ug/l	NR	<5	1,2,4-Trichlorobenzene	ug/l	<5
Bromomethane	ug/l	NR	<5	4-Chloro-3-methylphenol	ug/l	<5
Carbon tetrachloride	ug/l	NR	<5	2-Chlorophenol	ug/l	<5
Chlorobenzene	ug/l	NR	<5	2,4-Dichlorophenol	ug/l	<5
Chlorodibromomethane	ug/l	NR	<5	2,4-Dimethylphenol	ug/l	<5
Chloroethane	ug/l	NR	<5	2,4-Dinitrophenol	ug/l	<5
Chloroform	ug/l	NR	<5	2-Methyl-4,6-dinitrophenol	ug/l	<5
2-Chlorethylvinyl Ether	ug/l	NR	<5	2-Nitrophenol	ug/l	<5
Chloromethane	ug/l	NR	<5	4-Nitrophenol	ug/l	<5
Chlorodibromomethane	ug/l	NR	<5	Pentachlorophenol	ug/l	<5
Dibromomethane	ug/l	NR	<5	Phenol	ug/l	<5
1,2-Dichlorobenzene	ug/l	NR	<5	2,4,6-Trichlorophenol	ug/l	<5
1,3-Dichlorobenzene	ug/l	NR	<5			
1,4-Dichlorobenzene	ug/l	NR	<5			

TABLE C-1 (CONTINUED): EQUIPMENT BLANK SAMPLE ANALYTICAL RESULTS
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		EQUIPMENT BLANK 1	EQUIPMENT BLANK 2			EQUIPMENT BLANK 2
		12-Sep-95	12-Sep-95			12-Sep-95
VOLATILE ORGANICS	UNITS	Tuesday	Tuesday	PESTICIDES/PCBs	UNITS	Tuesday
Dichlorodifluoromethane	ug/l	NR	<5	Aldrin	ug/l	<0.04
1,1-Dichloroethane	ug/l	NR	<5	alpha-BHC	ug/l	<0.03
1,2-Dichloroethane	ug/l	NR	<5	beta-BHC	ug/l	<0.06
1,1-Dichloroethene	ug/l	NR	<5	delta-BHC	ug/l	<0.09
Trans-1,2-Dichloroethene	ug/l	NR	<5	Lindane (gamma-BHC)	ug/l	<0.03
1,2-Dichloroethene	ug/l	NR	<5	Chlordane	ug/l	<0.14
1,2-Dichloropropane	ug/l	NR	<5	4,4' DDD	ug/l	<0.11
Cis-1,3-Dichloropropene	ug/l	NR	<5	4,4' DDE	ug/l	<0.04
Trans-1,3-Dichloropropene	ug/l	NR	<5	p, p - DDT	ug/l	<0.12
Ethyl Benzene	ug/l	NR	<5	Dieldrin	ug/l	<0.02
Methylene Chloride	ug/l	NR	<5	Endosulfan I	ug/l	<0.14
1,1,1,2-Tetrachloroethane	ug/l	NR	<5	Endosulfan II	ug/l	<0.04
1,1,2,2-Tetrachloroethane	ug/l	NR	<5	Endosulfan Sulfate	ug/l	<0.66
Tetrachloroethylene	ug/l	NR	<5	Endrin	ug/l	<0.06
Toluene	ug/l	NR	<5	Endrin Aldehyde	ug/l	<0.23
1,1,1-Trichloroethane	ug/l	NR	<5	Heptachlor	ug/l	<0.03
1,1,2-Trichloroethane	ug/l	NR	<5	Heptachlor Epoxide	ug/l	<0.83
Trichloroethylene	ug/l	NR	<5	Texaphene	ug/l	<1
Trichlorofluoromethane		NR	SEE COMMENT*	Aroclor 1016	ug/l	<1
1,2,3-Trichloropropane	ug/l	NR	<5	Aroclor 1221	ug/l	<1
Vinyl Chloride	ug/l	NR	<5	Aroclor 1232	ug/l	<1
o-Xylene	ug/l	NR	<5	Aroclor 1242	ug/l	<0.65
				Aroclor 1248	ug/l	<1
HERBICIDES				Aroclor 1254	ug/l	<1
2,4-D	ug/l	NR	<1.2	Aroclor 1260	ug/l	<1
2,4-DB	ug/l	NR	<0.91			
Dalapon	ug/l	NR	<5.8	HERBICIDES		
Dicamba	ug/l	NR	<0.27	MCPA	ug/l	<249
Dichloroprop	ug/l	NR	<0.65	MCPP	ug/l	<192
Dinoseb	ug/l	NR	<0.07	Silvex	ug/l	<0.17
				2,4,5-T	ug/l	<0.20

*Not requested for Trichlorefluoromethane due to contamination from refrigerant leak.

**Not requested for analysis.

TABLE C-2: REAGENT AND TRIP BLANK SAMPLE ANALYTICAL RESULTS
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		REAGENT BLANK			TRIP BLANK
		12-Sep-95			7-Sep-95
GROUP A & B ANALYTES	**UNITS**	**Tuesday**	**VOLATILE ORGANICS**	**UNITS**	**Thursday**
Chemical Oxygen Demand	mg/l	<10	Benzene	ug/l	<100
Oil and Grease	mg/l	0.3	Benzyl Chloride	ug/l	NA*
Total Petroleum Hydrocarbon	mg/l	<1	Bromobenzene	ug/l	NA*
			Bromodichloromethane	ug/l	NA*
GROUP D ANALYTES		<0.005	Bromoform	ug/l	NA*
Cyanide (Total)	mg/l		Bromomethane	ug/l	NA*
			Carbon tetrachloride	ug/l	NA*
GROUP E ANALYTES			Chlorobenzene	ug/l	<100
Phenols	ug/l	<10	Chlorodibromomethane	ug/l	NA*
			Chloroethane	ug/l	NA*
METALS			Chloroform	ug/l	NA*
GROUP F ANALYTES			2-Chlorethylvinyl Ether	ug/l	NA*
Aluminum	mg/l	<0.030	Chloromethane	ug/l	NA*
Antimony	mg/l	<0.005	Chlorodibromomethane	ug/l	NA*
Arsenic	mg/l	<0.005	Dibromomethane	ug/l	NA*
Barium	mg/l	<0.001	1,2-Dichlorobenzene	ug/l	<100
Beryllium	mg/l	<0.001	1,3-Dichlorobenzene	ug/l	<100
Cadmium	mg/l	<0.010	1,4-Dichlorobenzene	ug/l	<100
Total Chromium	mg/l	<0.010	Dichlorodifluoromethane	ug/l	NA*
Cobalt	mg/l	<0.050	1,1-Dichloroethane	ug/l	NA*
Copper	mg/l	<0.020	1,2-Dichloroethane	ug/l	NA*
Iron	mg/l	<0.030	1,1-Dichloroethene	ug/l	NA*
Lead	mg/l	<0.001	Trans-1,2-Dichloroethene	ug/l	NA*
Manganese	mg/l	<0.030	1,2-Dichloropropane	ug/l	NA*
Mercury	mg/l	<0.0002	Cis-1,3-Dichloropropene	ug/l	NA*
Molybdenum	mg/l	<0.030	Trans-1,3-Dichloropropene	ug/l	NA*
Nickel	mg/l	<0.020	Ethyl Benzene	ug/l	<100
Selenium	mg/l	<0.005	4-Isopropyltoluene	ug/l	NA*
Silver	mg/l	<0.010	Methylene Chloride	ug/l	NA*
Thallium	mg/l	<0.001	1,1,1,2-Tetrachloroethane	ug/l	NA*
Titanium	mg/l	<0.050	1,1,2,2-Tetrachloroethane	ug/l	NA*
Vanadium	mg/l	<0.050	Tetrachloroethylene	ug/l	NA*
Zinc	mg/l	<0.050	Toluene	ug/l	<100

TABLE C-2 (CONTINUED): REAGENT AND TRIP BLANK SAMPLE ANALYTICAL RESULTS
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		REAGENT BLANK			TRIP BLANK
		12-Sep-95			7-Sep-95
VOLATILE ORGANICS	UNITS	Tuesday	VOLATILE ORGANICS	UNITS	Thursday
Benzene	ug/l	<5	1,1,1-Trichloroethane	ug/l	NA*
Benzyl Chloride	ug/l	<5	1,1,2-Trichloroethane	ug/l	NA*
Bromobenzene	ug/l	<5	Trichloroethylene	ug/l	NA*
Bromodichloromethane	ug/l	<5	Trichlorofluoromethane	ug/l	NA*
Bromoform	ug/l	<5	1,2,3-Trichloropropane	ug/l	NA*
Bromomethane	ug/l	<5	Vinyl Chloride	ug/l	NA*
Carbon tetrachloride	ug/l	<5	m-Xylene	ug/l	<100
Chlorobenzene	ug/l	<5	o-Xylene	ug/l	<100
Chlorodibromomethane	ug/l	<5	p-Xylene	ug/l	<100
Chloroethane	ug/l	<5			
Chloroform	ug/l	<5			
2-Chlorethylvinyl Ether	ug/l	<5			
Chloromethane	ug/l	<5			
Chlorodibromomethane	ug/l	<5			
Dibromomethane	ug/l	<5			
1,2-Dichlorobenzene	ug/l	<5			
1,3-Dichlorobenzene	ug/l	<5			
1,4-Dichlorobenzene	ug/l	<5			
Dichlorodifluoromethane	ug/l	<5			
1,1-Dichloroethane	ug/l	<5			
1,2-Dichloroethane	ug/l	<5			
1,1-Dichloroethene	ug/l	<5			
Trans-1,2-Dichloroethene	ug/l	<5			
1,2-Dichloropropane	ug/l	<5			
Cis-1,3-Dichloropropene	ug/l	<5			
Trans-1,3-Dichloropropene	ug/l	<5			
Ethyl Benzene	ug/l	<5			
4-Isopropyltoluene	ug/l	<5			
Methylene Chloride	ug/l	<5			
1,1,1,2-Tetrachloroethane	ug/l	<5			
1,1,2,2-Tetrachloroethane	ug/l	<5			
Tetrachloroethylene	ug/l	<5			

TABLE C-2 (CONTINUED): REAGENT AND TRIP BLANK SAMPLE ANALYTICAL RESULTS
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		REAGENT BLANK			
		12-Sep-95			
VOLATILE ORGANICS	UNITS	Tuesday			
1,1,1-Trichloroethane	ug/l	<5			
1,1,2-Trichloroethane	ug/l	<5			
Trichloroethylene	ug/l	<5			
Trichlorofluoromethane	ug/l	NA*			
1,2,3-Trichloropropane	ug/l	<5			
Vinyl Chloride	ug/l	<5			

*Not Analyzed

TABLE C-3: SAMPLE SPIKE ANALYTICAL RESULTS
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		SS-1 (11-SEP-95)	SS-2 (11-SEP-95)	
GROUP A & B ANALYTES	**UNITS**	**Monday**	**Monday**	**Performance Acceptance Limits**
Chemical Oxygen Demand	mg/l	145	152	133-181 mg/L
Oil and Grease	mg/l	49.6	44.8	44.5 - 92.6 mg/bottle
GROUP D ANALYTES				
Cyanide (Total)	mg/l	0.325	0.162	0.295 - 0.513 mg/L
GROUP E ANALYTES	ug/l			**Expressed in ug/l**
Phenols		0.082	0.146	0.108 - 0.176
METALS				
GROUP F ANALYTES				
Aluminum	mg/l	0.223	0.255	0.211 - 0.342
Antimony	mg/l	0.067	<0.005	0.0536 - 0.0843
Arsenic	mg/l	0.06	0.07	0.0482 - 0.0759
Barium	mg/l	0.14	0.164	0.146 - 0.211
Beryllium	mg/l	0.045	0.053	0.0469 - 0.0674
Cadmium	mg/l	0.061	0.072	0.0644 - 0.0927
Total Chromium	mg/l	0.132	0.153	0.135 - 0.194
Cobalt	mg/l	0.19	0.221	0.193 - 0.278
Copper	mg/l	0.162	0.188	0.170 - 0.244
Iron	mg/l	0.309	0.36	0.310 - 0.447
Lead	mg/l	0.137	0.154	0.129 - 0.185
Manganese	mg/l	0.19	0.222	0.199 - 0.287
Mercury	mg/l	0.0034	0.003	0.00214 - 0.00357
Molybdenum	mg/l	0.21	0.244	0.211 - 0.303
Nickel	mg/l	0.184	0.214	0.187 - 0.270
Selenium	mg/l	0.086	0.101	0.0857 - 0.135
Silver	mg/l	0.075	0.089	0.0791 - 0.114
Thallium	mg/l	0.053	0.064	0.0482 - 0.0759
Vanadium	mg/l	0.119	0.138	0.126 - 0.181
Zinc	mg/l	0.214	0.251	0.217 - 0.312
GROUP G				
Residue Total	mg/l	52	417	386 - 504
Residue , Filterable (TDS)	mg/l	396	392	359 - 467
Surfactants-MBAs	mg/l	0.75	0.74	1 mg/L

TABLE C-4: DUPLICATE METALS AND VOLATILES ANALYTICAL RESULTS
SITE 1, BASE EFFLUENT
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

METALS		8-Sep-95	8-Sep-95
GROUP F ANALYTES	UNITS	Friday	DUPLICATE
Aluminum	mg/l	0.412	0.376
Antimony	mg/l	<0.005	<0.005
Arsenic	mg/l	<0.005	<0.005
Barium	mg/l	<0.050	<0.050
Beryllium	mg/l	<0.001	<0.001
Cadmium	mg/l	0.004	0.004
Chromium	mg/l	<0.010	<0.010
Cobalt	mg/l	<0.050	<0.050
Copper	mg/l	0.054	0.051
Iron	mg/l	1.13	1.06
Lead	mg/l	<0.020	<0.020
Manganese	mg/l	<0.030	<0.030
Mercury	mg/l	0.0002	0.0002
Molybdenum	mg/l	<0.030	<0.030
Nickel	mg/l	<0.030	<0.030
Selenium	mg/l	<0.010	<0.010
Silver	mg/l	<0.010	<0.010
Thallium	mg/l	<0.001	<0.001
Titanium	mg/l	<0.050	<0.050
Vanadium	mg/l	<0.050	<0.050
Zinc	mg/l	0.089	0.09

TABLE C-4 (CONTINUED): DUPLICATE METALS AND VOLATILES ANALYTICAL RESULTS
SITE 1, BASE EFFLUENT
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		8-Sep-95	8-Sep-95
VOLATILE ORGANICS	UNITS	Friday	DUPLICATE
Benzene	ug/l	<1	<1
Benzyl Chloride	ug/l	<1	<1
Bromobenzene	ug/l	<1	<1
Bromodichloromethane	ug/l	<1	<1
Bromoform	ug/l	<1	<1
Bromomethane	ug/l	<1	<1
Carbon tetrachloride	ug/l	<1	<1
Chlorobenzene	ug/l	<1	<1
Chlorodibromomethane	ug/l	<1	<1
Chloroethane	ug/l	<1	<1
Chloroform	ug/l	<1	<1
2-Chlorethylvinyl Ether	ug/l	<1	<1
Chloromethane	ug/l	<1	<1
Chlorodibromomethane	ug/l	<1	<1
Dibromomethane	ug/l	<1	<1
1,2-Dichlorobenzene	ug/l	<1	<1
1,3-Dichlorobenzene	ug/l	<1	<1
1,4-Dichlorobenzene	ug/l	<1	<1
Dichlorodifluoromethane	ug/l	<1	<1
1,1-Dichloroethane	ug/l	<1	<1
1,2-Dichloroethane	ug/l	<1	<1
1,1-Dichloroethene	ug/l	<1	<1
Trans-1,2-Dichloroethene	ug/l	<1	<1
1,2-Dichloroethene	ug/l	<1	<1
1,2-Dichloropropane	ug/l	<1	<1
Cis-1,3-Dichloropropene	ug/l	<1	<1
Trans-1,3-Dichloropropene	ug/l	<1	<1
Ethyl Benzene	ug/l	<1	<1
Methylene Chloride	ug/l	<1	<1
1,1,1,2-Tetrachloroethane	ug/l	<1	<1

TABLE C-4 (CONTINUED): DUPLICATE METALS AND VOLATILES ANALYTICAL RESULTS
SITE 1, BASE EFFLUENT
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		8-Sep-95	8-Sep-95
VOLATILE ORGANICS	UNITS	Friday	DUPLICATE
1,1,2,2-Tetrachloroethane	ug/l	<1	<1
Tetrachloroethylene	ug/l	<1	<1
Toluene	ug/l	<1	<1
1,1,1-Trichloroethane	ug/l	<1	<1
1,1,2-Trichloroethane	ug/l	<1	<1
Trichloroethylene	ug/l	<1	<1
Trichlorofluoromethane	ug/l	<1	<1
1,2,3-Trichloropropane	ug/l	<1	<1
Vinyl Chloride	ug/l	<1	<1
o-Xylene	ug/l	<1	<1
p,m-Xylene	ug/l	<1	<1

TABLE C-5: ADDITIONAL DUPLICATE SAMPLE ANALYTICAL RESULTS
SITE 1, BASE EFFLUENT
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTE WATER CHARACTERIZATION SURVEY
07 - 13 SEPTEMBER 1995

		8-Sep-95	8-Sep-95
GROUP A & B ANALYTES	**UNITS**	**Friday**	**DUPLICATE**
Chemical Oxygen Demand	mg/l	192	199
Oil and Grease	mg/l	60.4	57.2
Total Petroleum Hydrocarbon	mg/l	11.6	9.2
GROUP D ANALYTES			
Cyanide (Total)	mg/l	0.023	0.023
GROUP E ANALYTES			
Phenols	ug/l	291	78
GROUP G			
Residue Total	mg/l	391	312
Residue, Filterable (TDS)	mg/l	135	35
Residue, Nonfilterable (TSS)	mg/l	45	105
Residue, Settleable	mg/l	0.6	1.4
Residue, Total Volatile	mg/l	242	169
Surfactants-MBAs	mg/l	0.2	0.3
ON SITE ANALYSES			
pH	units	6	6
Temperature	°C	23	23

Note: Shaded values exceed EHTMUA's permissible concentrations.

TABLE C-6: BACKGROUND POTABLE WATER SAMPLE ANALYTICAL RESULTS
ATLANTIC CITY AIR NATIONAL GUARD WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

			CLINIC				CLINIC
			12-Sep-95				12-Sep-95
GROUP A & B ANALYTES	**UNITS**		**Tuesday**	**VOLATILE ORGANICS**	**UNITS**		**Tuesday**
Chemical Oxygen Demand	mg/l		<10	Benzene	ug/l		<0.5
Oil and Grease	mg/l		0.9	Benzyl Chloride	ug/l		<0.5
Total Petroleum Hydrocarbon	mg/l		<1	Bromobenzene	ug/l		<0.5
				Bromodichloromethane	ug/l		1.13
GROUP D ANALYTES				Bromoform	ug/l		2.38
Cyanide (Total)	mg/l		<0.005	Bromomethane	ug/l		<0.5
				Carbon tetrachloride	ug/l		<0.5
GROUP E ANALYTES				Chlorobenzene	ug/l		<0.5
Phenols	ug/l		<10	Chlorodibromomethane	ug/l		<0.5
				Chloroethane	ug/l		<0.5
METALS				Chloroform	ug/l		2.05
GROUP F ANALYTES				2-Chlorethylvinyl Ether	ug/l		<0.5
Aluminum	mg/l		0.252	Chloromethane	ug/l		<0.5
Antimony	mg/l		<0.005	Chlorodibromomethane	ug/l		2
Arsenic	mg/l		<0.005	Dibromomethane	ug/l		<0.5
Barium	mg/l		<0.05	1,2-Dichlorobenzene	ug/l		<0.5
Beryllium	mg/l		<0.001	1,3-Dichlorobenzene	ug/l		<0.5
Cadmium	mg/l		<0.001	1,4-Dichlorobenzene	ug/l		<0.5
Total Chromium	mg/l		<0.010	Dichlorodifluoromethane	ug/l		<0.5
Cobalt	mg/l		<0.05	1,1-Dichloroethane	ug/l		<0.5
Copper	mg/l		0.143	1,2-Dichloroethane	ug/l		<0.5
Iron	mg/l		0.194	1,1-Dichloroethene	ug/l		<0.5
Lead	mg/l		0.002	Trans-1,2-Dichloroethene	ug/l		<0.5
Manganese	mg/l		<0.030	1,2-Dichloroethene	ug/l		<0.5
Mercury	mg/l		<0.0002	1,2-Dichloropropane	ug/l		<0.5
Molybdenum	mg/l		<0.030	Cis-1,3-Dichloropropene	ug/l		<0.5
Nickel	mg/l		<0.020	Trans-1,3-Dichloropropene	ug/l		<0.5
Selenium	mg/l		<0.005	Ethyl Benzene	ug/l		<0.5
Silver	mg/l		<0.010	Methylene Chloride	ug/l		<0.5
Thallium	mg/l		<0.001	1,1,1,2-Tetrachloroethane	ug/l		<0.5
Titanium	mg/l		<0.050	1,1,2,2-Tetrachloroethane	ug/l		<0.5
Vanadium	mg/l		<0.050	Tetrachloroethylene	ug/l		<0.5
Zinc	mg/l		<0.050	Toluene	ug/l		<0.5

TABLE C-6 (CONTINUED): BACKGROUND POTABLE WATER SAMPLE ANALYTICAL RESULTS
ATLANTIC CITY AIR NATIONAL GUARD WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

			CLINIC				CLINIC
			12-Sep-95				12-Sep-95
GROUP G	UNITS		Tuesday	VOLATILE ORGANICs	UNITS		Tuesday
Residue Total	mg/l		92	Trichloroethylene	ug/l		<0.5
Residue , Filterable (TDS)	mg/l		87	Trichlorofluoromethane	ug/l		<0.5
Residue, Nonfilterable (TSS)	mg/l		<1	1,2,3-Trichloropropane	ug/l		<0.5
Residue, Settleable	mg/l		<0.2	Vinyl Chloride	ug/l		<0.5
Residue, Total Volatile	mg/l		20	o-Xylene	ug/l		<0.5
Surfactants-MBAs	mg/l		<0.1	p,m-Xylene	ug/l		<0.5
				TOTAL TRIHALOMETHANES			
				Bromodichloromethane	ug/l		1.29
				Bromoform	ug/l		3.16
				Chloroform	ug/l		2.59
				Chlorodibromomethane	ug/l		2.02
				Total Trihalomethane	ug/l		9.06

TABLE C-6 (CONTINUED): BACKGROUND POTABLE WATER SAMPLE ANALYTICAL RESULTS
ATLANTIC CITY AIR NATIONAL GUARD WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

			ALERT FACILITY				ALERT FACILITY
			13-Sep-95				13-Sep-95
GROUP A & B ANALYTES	**UNITS**		**Wednesday**	**VOLATILE ORGANICs**	**UNITS**		**Wednesday**
Chemical Oxygen Demand	mg/l		<10	Benzene	ug/l		<0.5
Oil and Grease	mg/l		1.4	Benzyl Chloride	ug/l		<0.5
Total Petroleum Hydrocarbon	mg/l		1.4	Bromobenzene	ug/l		<0.5
				Bromodichloromethane	ug/l		<0.5
GROUP D ANALYTES				Bromoform	ug/l		<0.5
Cyanide (Total)	mg/l		NR*	Bromomethane	ug/l		<0.5
				Carbon tetrachloride	ug/l		<0.5
GROUP E ANALYTES				Chlorobenzene	ug/l		<0.5
Phenols	ug/l		<10	Chlorodibromomethane	ug/l		<0.5
				Chloroethane	ug/l		<0.5
METALS				Chloroform	ug/l		1.46
GROUP F ANALYTES				2-Chlorethylvinyl Ether	ug/l		<0.5
Aluminum	mg/l		<0.030	Chloromethane	ug/l		<0.5
Antimony	mg/l		<0.005	Chlorodibromomethane	ug/l		<0.5
Arsenic	mg/l		<0.005	Dibromomethane	ug/l		<0.5
Barium	mg/l		<0.05	1,2-Dichlorobenzene	ug/l		<0.5
Beryllium	mg/l		<0.001	1,3-Dichlorobenzene	ug/l		<0.5
Cadmium	mg/l		<0.001	1,4-Dichlorobenzene	ug/l		<0.5
Total Chromium	mg/l		<0.010	Dichlorodifluoromethane	ug/l		<0.5
Cobalt	mg/l		<0.05	1,1-Dichloroethane	ug/l		<0.5
Copper	mg/l		<0.020	1,2-Dichloroethane	ug/l		<0.5
Iron	mg/l		<0.030	1,1-Dichloroethene	ug/l		<0.5
Lead	mg/l		<0.001	Trans-1,2-Dichloroethene	ug/l		<0.5
Manganese	mg/l		<0.030	1,2-Dichloroethene	ug/l		<0.5
Mercury	mg/l		<0.0002	1,2-Dichloropropane	ug/l		<0.5
Molybdenum	mg/l		<0.030	Cis-1,3-Dichloropropene	ug/l		<0.5
Nickel	mg/l		<0.020	Trans-1,3-Dichloropropene	ug/l		<0.5
Selenium	mg/l		<0.005	Ethyl Benzene	ug/l		<0.5
Silver	mg/l		<0.010	Methylene Chloride	ug/l		<0.5
Thallium	mg/l		<0.001	1,1,1,2-Tetrachloroethane	ug/l		<0.5
Titanium	mg/l		<0.050	1,1,2,2-Tetrachloroethane	ug/l		<0.5
Vanadium	mg/l		<0.050	Tetrachloroethylene	ug/l		<0.5
Zinc	mg/l		<0.050	Toluene	ug/l		<0.5

TABLE C-6 (CONTINUED): BACKGROUND POTABLE WATER SAMPLE ANALYTICAL RESULTS
ATLANTIC CITY AIR NATIONAL GUARD WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

			ALERT FACILITY				ALERT FACILITY
			13-Sep-95				13-Sep-95
GROUP G	**UNITS**		**Wednesday**	**VOLATILE ORGANICS**	**UNITS**		**Wednesday**
Residue Total	mg/l		41	Trichloroethylene	ug/l		<0.5
Residue , Filterable (TDS)	mg/l		40	Trichlorofluoromethane	ug/l		<0.5
Residue, Nonfilterable (TSS)	mg/l		<1	1,2,3-Trichloropropane	ug/l		<0.5
Residue, Settleable	mg/l		NR*	Vinyl Chloride	ug/l		<0.5
Residue, Total Volatile	mg/l		NR*	o-Xylene	ug/l		<0.5
Surfactants-MBAs	mg/l		<0.1	p,m-Xylene	ug/l		<0.5
				TOTAL TRIHALOMETHANES			
				Bromodichloromethane	ug/l		1.46
				Bromoform	ug/l		1.46
				Chloroform	ug/l		<0.5
				Chlorodibromomethane	ug/l		<0.5
				Total Trihalomethane	ug/l		<0.5

*Not requested for analysis.

APPENDIX D
WASTEWATER CHARACTERIZATION SAMPLING RESULTS

TABLE D-1: METALS AND VOLATILE ORGANICS ANALYTICAL RESULTS
SITE 1, BASE EFFLUENT
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		7-Sep-95	8-Sep-95	8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	12-Sep-95	13-Sep-95
METALS	UNITS	Thursday	Friday	DUPLICATE	Saturday	Sunday	Monday	Tuesday	Wednesday
Aluminum	mg/l	0.408	0.412	0.376	0.844	1.45	0.933	0.938	0.612
Antimony	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	mg/l	0.042	<0.050	<0.050	<0.050	0.239	0.075	0.07	0.073
Beryllium	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/l	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.004
Chromium	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	mg/l	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Copper	mg/l	0.033	0.054	0.051	0.071	0.086	0.06	0.065	0.085
Iron	mg/l	1.14	1.13	1.06	1.5	2.52	1.94	2.76	2.44
Lead	mg/l	<0.020	<0.020	<0.020	<0.020	0.027	<0.020	<0.020	<0.020
Manganese	mg/l	<0.030	<0.030	<0.030	<0.030	0.033	0.034	0.046	0.045
Mercury	mg/l	0.0002	0.0002	0.0002	0.0003	<0.0002	0.0003	0.0003	0.0003
Molybdenum	mg/l	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Nickel	mg/l	<0.020	<0.030	<0.030	<0.030	<0.030	<0.020	<0.020	<0.020
Selenium	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	mg/l	<0.010	<0.010	<0.010	0.041	0.04	<0.010	<0.010	<0.010
Thallium	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	mg/l	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Vanadium	mg/l	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Zinc	mg/l	0.079	0.089	0.09	0.132	0.186	0.096	0.129	0.179

TABLE D-1 (CONTINUED): METALS AND VOLATILE ORGANICS ANALYTICAL RESULTS
SITE 1, BASE EFFLUENT
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		7-Sep-95	8-Sep-95	8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	12-Sep-95	13-Sep-95
VOLATILE ORGANICS	UNITS	Thursday	Friday	DUPLICATE	Saturday	Sunday	Monday	Tuesday	Wednesday
Benzene	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Benzyl Chloride	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Bromobenzene	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Chlorodibromomethane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
2-Chlorethylvinyl Ether	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Chlorodibromomethane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	ug/l	1.2	<1	<1	1	1.12	<1	<1	1.76
Dichlorodifluoromethane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,2-Dichloroethene	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloroethene	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Cis-1,3-Dichloropropene	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,3-Dichloropropene	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Ethyl Benzene	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Methylene Chloride	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethylene	ug/l	<1	<1	<1	<1	<1	<1	<1	<1

TABLE D-1 (CONTINUED): METALS AND VOLATILE ORGANICS ANALYTICAL RESULTS
SITE 1, BASE EFFLUENT
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		7-Sep-95	8-Sep-95	8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	12-Sep-95	13-Sep-95
VOLATILE ORGANICS	UNITS	Thursday	Friday	DUPLICATE	Saturday	Sunday	Monday	Tuesday	Wednesday
Toluene	ug/l	<1	<1	<1	1.2	1.25	1.61	2	3.94
1,1,1-Trichloroethane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethylene	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
Vinyl Chloride	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/l	<1	<1	<1	<1	<1	<1	<1	<1
p,m-Xylene	ug/l	<1	<1	<1	<1	<1	<1	<1	<1

TABLE D-2: ADDITIONAL ANALYTICAL RESULTS
SITE 1, BASE EFFLUENT
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTE WATER CHARACTERIZATION SURVEY
07 - 13 SEPTEMBER 1995

		7-Sep-95	8-Sep-95	8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	12-Sep-95	13-Sep-95
GROUP A & B ANALYTES	**UNITS**	**Thursday**	**Friday**	**DUPLICATE**	**Saturday**	**Sunday**	**Monday**	**Tuesday**	**Wednesday**
Chemical Oxygen Demand	mg/l	105	192	199	270	381	431	197	190
Oil and Grease	mg/l	34.4	60.4	57.2	4.4	212	84.8	110.4	32
Total Petroleum Hydrocarbon	mg/l	12.8	11.6	9.2	<1	176	11.2	12.8	11.2
GROUP D ANALYTES									
Cyanide (Total)	mg/l	0.011	0.023	0.023	0.043	0.046	0.035	<0.005	<0.005
GROUP E ANALYTES									
Phenols	ug/l	13	291	78	156	38	25	<10	<10
GROUP G									
Residue Total	mg/l	147	391	312	393	718	607	319	463
Residue, Filterable (TDS)	mg/l	140	135	35	300	180	400	68	258
Residue, Nonfilterable (TSS)	mg/l	12	45	105	100	330	150	44	12
Residue, Settleable	mg/l	0.9	0.6	1.4	0.7	6.2	1.4	1.7	5.3
Residue, Total Volatile	mg/l	54	242	169	200	483	384	163	246
Surfactants-MBAs	mg/l	0.2	0.2	0.3	0.1	<0.1	0.3	1	2
ON SITE ANALYSES									
pH	units	6	6	6	6	5	5.5	5.8	6
Temperature	°C	17	23	23	23	25	21	79	23

Note: Shaded values exceed EHTMUA's permissible concentrations.

TABLE D-3: BNAs, PCBs, PESTICIDES, AND HERBICIDES ANALYTICAL RESULTS
SITE 1, BASE EFFLUENT
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07 - 13 SEPTEMBER 1995

		7-Sep-95	9-Sep-95			7-Sep-95	9-Sep-95
BASE/NEUTRAL ACIDS	**UNITS**	**Thursday**	**Saturday**	**PESTICIDES/PCBs**	**Units**	**Thursday**	**Saturday**
Acenaphthene	ug/L	<10	<10	Aldrin	ug/L	<0.04	<0.04
Acenaphthylene	ug/L	<10	<10	alpha-BHC	ug/L	<0.03	<0.03
Anthracene	ug/L	<10	<10	beta-BHC	ug/L	<0.06	<0.06
Aroclor 1260	ug/L	<10	<10	delta-BHC	ug/L	<0.09	<0.09
Benzidine	ug/L	<50	<50	Lindane (gamma-BHC)	ug/L	<0.03	<0.03
Benzo(a)anthracene	ug/L	<10	<10	Chlordane	ug/L	<0.14	<0.14
Benzo(b)fluoranthene	ug/L	<10	<10	4,4' DDD	ug/L	<0.14	<0.14
Benzo(k)fluoranthene	ug/L	<10	<10	4,4' DDE	ug/L	<0.04	<0.04
Benzo(a)pyrene	ug/L	<10	<10	4,4 - DDT	ug/L	<0.12	<0.12
Benzo(ghi)perylene	ug/L	<10	<10	Dieldrin	ug/L	<0.02	<0.02
Benzyl butyl phthalate	ug/L	<10	<10	Endosulfan I	ug/L	<0.14	<0.14
Bis(2-chloroethyl)ether	ug/L	<10	<10	Endosulfan II	ug/L	<0.04	<0.04
Bis(2-chloroethoxy)methane	ug/L	<10	<10	Endosulfan Sulfate	ug/L	<0.66	<0.66
Bis(2-ethylhexyl)phthalate	ug/L	50	34	Endrin	ug/L	<0.06	<0.06
Bis(2-chloroisopropyl)ether	ug/L	<10	<10	Endrin Aldehyde	ug/L	<0.023	<0.023
4-Bromophenyl phenyl ether	ug/L	<10	<10	Heptachlor	ug/L	<0.03	<0.03
2-Chloronaphthalene	ug/L	<10	<10	Heptachlor Epoxide	ug/L	<0.83	<0.83
4-Chlorophenyl phenyl ether	ug/L	<10	<10	Texaphene	ug/L	<1	<1
Chrysene	ug/L	<10	<10	Aroclor 1016	ug/L	<1	<1
Dibenzo(a,h)anthracene	ug/L	<10	<10	Aroclor 1221	ug/L	<1	<1
Di-n-butylphthalate	ug/L	<10	<10	Aroclor 1232	ug/L	<1	<1
1,2-Dichlorobenzene	ug/L	<10	<10	Aroclor 1242	ug/L	<0.65	<0.65
1,3-Dichlorobenzene	ug/L	<10	<10	Aroclor 1248	ug/L	<1	<1
1,4-Dichlorobenzene	ug/L	<10	<10	Aroclor 1254	ug/L	<1	<1
3,3-Dichlorobenzidine	ug/L	<20	<20	Aroclor 1260	ug/L	<1	<1

TABLE D-3 (CONT): BNAs, PCBs, PESTICIDES, AND HERBICIDES ANALYTICAL RESULTS
SITE 1, BASE EFFLUENT
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07 - 13 SEPTEMBER 1995

		7-Sep-95	9-Sep-95			7-Sep-95	9-Sep-95
BASE/NEUTRAL ACIDS	**UNITS**	**Thursday**	**Saturday**	**HERBICIDES**		**Thursday**	**Saturday**
Diethyl phthalate	ug/L	<10	<10	2,4-D	ug/L	CBC*	<1.2
Dimethyl phthalate	ug/L	<10	<10	2,4-DB	ug/L	CBC*	<0.91
2,4-Dinitrotoluene	ug/L	<10	<10	Dalapon	ug/L	CBC*	<5.8
2,6-Dinitrotoluene	ug/L	<10	<10	Dicamba	ug/L	CBC*	<0.27
Di-n--octyl phthalate	ug/L	<10	<10	Dichloroprop	ug/L	CBC*	<0.65
Fluoranthene	ug/L	<10	<10	Dinoseb	ug/L	CBC*	<0.07
Fluorene	ug/L	<10	<10	MCPA	ug/L	CBC*	<249
Hexachlorobenzene	ug/L	<10	<10	MCPP	ug/L	CBC*	<192
Hexachlorobutadiene	ug/L	<10	<10	Silvex	ug/L	CBC*	<0.17
Hexachlorocyclopentadiene	ug/L	<10	<10	2,4,5-T	ug/L	CBC*	<0.20
Hexachloroethane	ug/L	<10	<10				
Indeno(1,2,3-cd)pyrene	ug/L	<10	<10				
Isophorone	ug/L	<10	<10				
Naphthalene	ug/L	<10	<10				
Nitrobenzene	ug/L	<10	<10				
N-Nitrosodimethylamine	ug/L	<10	<10				
N-Nitrosodi-n-propylamine	ug/L	<10	<10				
N-Nitrosodiphenylamine	ug/L	<10	<10				
Phenanthrene	ug/L	<10	<10				
Pyrene	ug/L	<10	<10				
1,2,4-Trichlorobenzene	ug/L	<10	<10				
4-Chloro-3-methylphenol	ug/L	<10	<10				
2-Chlorophenol	ug/L	<10	<10				
2,4-Dichlorophenol	ug/L	<10	<10				
2,4-Dimethylphenol	ug/L	<10	<10				
2,4-Dinitrophenol	ug/L	<50	<50				
2-Methyl-4,6-dinitrophenol	ug/L	<50	<50				
2-Nitrophenol	ug/L	<10	<10				
4-Nitrophenol	ug/L	<50	<50				
Pentachlorophenol	ug/L	<50	<50				
Phenol	ug/L	<10	<10				
2,4,6-Trichlorophenol	ug/L	<10	<10				

*Sample cancelled by chemist, due to spiking standard carryover contamination. Insufficient sample to re-extract.

TABLE D-4: METALS AND VOLATILE ORGANICS ANALYTICAL RESULTS
SITE 2, MAINTENANCE DOCK
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	13-Sep-95
METALS	UNITS	Friday	Saturday	Sunday	Monday	Wednesday
Aluminum	mg/l	0.7	1.33	1.08	1.35	0.476
Antimony	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	mg/l	0.098	0.058	0.131	0.139	0.071
Beryllium	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/l	0.017	0.013	0.003	0.006	0.009
Total Chromium	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	mg/l	<0.050	<0.050	<0.050	<0.050	<0.050
Copper	mg/l	0.169	0.335	0.141	0.155	0.161
Iron	mg/l	1.93	3.03	2.73	3.87	6.43
Lead	mg/l	0.026	<0.020	<0.020	<0.020	<0.020
Manganese	mg/l	0.059	0.069	0.058	0.109	0.107
Mercury	mg/l	0.0004	0.0004	0.0002	<0.0002	0.0003
Molybdenum	mg/l	<0.030	<0.030	<0.030	<0.030	<0.030
Nickel	mg/l	<0.020	<0.020	<0.020	<0.020	<0.020
Selenium	mg/l	<0.010	<0.010	<0.010	<0.010	<0.005
Silver	mg/l	<0.010	0.033	0.046	0.026	<0.010
Thallium	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	mg/l	<0.050	<0.050	<0.050	<0.050	<0.050
Vanadium	mg/l	<0.050	<0.050	<0.050	<0.050	<0.050
Zinc	mg/l	0.247	0.169	0.2	0.29	0.204

TABLE D-4 (CONT): METALS AND VOLATILE ORGANICS ANALYTICAL RESULTS
SITE 2, MAINTENANCE DOCK
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	13-Sep-95
VOLATILE ORGANICS	UNITS	Friday	Saturday	Sunday	Monday	Wednesday
Benzene	ug/l	<1	<1	<1	<1	<1
Benzyl Chloride	ug/l	<1	<1	<1	<1	<1
Bromobenzene	ug/l	<1	<1	<1	<1	<1
Bromodichloromethane	ug/l	<1	<1	<1	<1	<1
Bromoform	ug/l	<1	<1	<1	<1	<1
Bromomethane	ug/l	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/l	<1	<1	<1	<1	<1
Chlorobenzene	ug/l	<1	<1	<1	<1	<1
Chlorodibromomethane	ug/l	<1	<1	<1	<1	<1
Chloroethane	ug/l	<1	<1	<1	<1	<1
Chloroform	ug/l	<1	2.92	<1	3.58	<1
2-Chlorethylvinyl Ether	ug/l	<1	<1	<1	<1	<1
Chloromethane	ug/l	<1	<1	<1	<1	<1
Chlorodibromomethane	ug/l	<1	<1	<1	<1	<1
Dibromomethane	ug/l	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/l	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/l	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	ug/l	2.7	1.3	3.65	3.42	<1
Dichlorodifluoromethane	ug/l	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/l	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/l	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/l	<1	<1	<1	<1	<1
Trans-1,2-Dichloroethene	ug/l	<1	<1	<1	<1	<1
1,2-Dichloroethene	ug/l	<1	<1	<1	<1	<1
1,2-Dichloropropane	ug/l	<1	<1	<1	<1	<1
Cis-1,3-Dichloropropene	ug/l	<1	<1	<1	<1	<1
Trans-1,3-Dichloropropene	ug/l	<1	<1	<1	<1	<1
Ethyl Benzene	ug/l	<1	<1	<1	<1	<1
Methylene Chloride	ug/l	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane	ug/l	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/l	<1	<1	<1	<1	<1
Tetrachloroethylene	ug/l	<1	<1	<1	<1	<1

TABLE D-4 (CONT): METALS AND VOLATILE ORGANICS ANALYTICAL RESULTS
SITE 2, MAINTENANCE DOCK
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	13-Sep-95
VOLATILE ORGANICS	UNITS	Friday	Saturday	Sunday	Monday	Wednesday
Toluene	ug/l	6.11	4.18	2.98	2.41	3.31
1,1,1-Trichloroethane	ug/l	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	ug/l	<1	<1	<1	<1	<1
Trichloroethylene	ug/l	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/l	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/l	<1	<1	<1	<1	<1
Vinyl Chloride	ug/l	<1	<1	<1	<1	<1
o-Xylene	ug/l	<1	<1	<1	<1	<1
p,m-Xylene	ug/l	<1	<1	<1	<1	<1

TABLE D-5: ADDITIONAL ANALYTICAL RESULTS
SITE 2, MAINTENANCE DOCK
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTE WATER CHARACTERIZATION SURVEY
07 - 13 SEPTEMBER 1995

GROUP A & B ANALYTES	UNITS	8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	13-Sep-95
Chemical Oxygen Demand	mg/l	570	580	540	1660	399
Oil and Grease	mg/l	120	79.2	246.4	243.2	51.2
Total Petroleum Hydrocarbon	mg/l	20.8	7.2	17.6	44.8	9.6
GROUP D ANALYTES						
Cyanide (Total)	mg/l	0.04	0.011	0.043	0.08	<0.005
GROUP E ANALYTES						
Phenols	ug/l	92	298	32	12	28
GROUP G						
Residue Total	mg/l	1038	1048	954	1798	477
Residue, Filterable (TDS)	mg/l	415	730	300	460	175
Residue, Nonfilterable (TSS)	mg/l	145	160	470	220	45
Residue, Settleable	mg/l	6.2	0.7	8.1	25.5	0.4
Residue, Total Volatile	mg/l	794	529	697	1367	237
Surfactants-MBAs	mg/l	0.3	0.2	0.1	1.8	3.4
ON SITE ANALYSES						
pH	UNITS	5	5	6.5	5	4
Temperature	°C	20	23	24	14	23

Note: Shaded values exceed EHTMUA's permissible concentrations.

TABLE D-6: METALS AND VOLATILE ORGANICS ANALYTICAL RESULTS
SITE 3, AIRCRAFT AND MAINTENANCE HANGAR
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	13-Sep-95
METALS	UNITS	Friday	Saturday	Sunday	Monday	Wednesday
Aluminum	mg/l	0.454	1.55	1.53	3.88	1.29
Antimony	mg/l	0.008	0.005	0.005	0.009	<0.005
Arsenic	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	mg/l	0.098	0.572	0.155	1.64	0.412
Beryllium	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/l	0.016	0.033	0.017	0.058	0.044
Total Chromium	mg/l	<0.010	0.015	<0.010	0.016	<0.010
Cobalt	mg/l	<0.050	<0.050	<0.050	<0.050	<0.050
Copper	mg/l	0.036	0.095	0.075	0.179	0.104
Iron	mg/l	0.883	2.88	2.53	6.57	3.99
Lead	mg/l	<0.020	0.065	0.02	0.051	<0.020
Manganese	mg/l	0.036	0.092	0.088	0.206	0.132
Mercury	mg/l	0.0003	0.0009	0.001	0.007	0.0012
Molybdenum	mg/l	<0.030	<0.030	<0.030	<0.030	<0.030
Nickel	mg/l	<0.020	<0.020	<0.020	0.022	<0.030
Selenium	mg/l	<0.010	<0.010	<0.010	<0.010	<0.005
Silver	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Thallium	mg/l	<0.001	<0.001	<0.001	<0.001	<0.002
Titanium	mg/l	<0.050	<0.050	<0.050	0.067	<0.050
Vanadium	mg/l	<0.050	<0.050	<0.050	<0.050	<0.050
Zinc	mg/l	0.157	0.754	0.327	1.45	0.463

TABLE D-6 (CONT): METALS AND VOLATILE ORGANICS ANALYTICAL RESULTS
SITE 3, AIRCRAFT AND MAINTENANCE HANGAR
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	13-Sep-95
VOLATILE ORGANICS	UNITS	Friday	Saturday	Sunday	Monday	Wednesday
Benzene	ug/l	<1	<1	<1	<1	<1
Benzyl Chloride	ug/l	<1	<1	<1	<1	<1
Bromobenzene	ug/l	<1	<1	<1	<1	<1
Bromodichloromethane	ug/l	<1	<1	<1	<1	<1
Bromoform	ug/l	<1	<1	<1	<1	<1
Bromomethane	ug/l	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/l	<1	<1	<1	<1	<1
Chlorobenzene	ug/l	<1	<1	<1	<1	<1
Chlorodibromomethane	ug/l	<1	<1	<1	<1	<1
Chloroethane	ug/l	<1	<1	<1	<1	<1
Chloroform	ug/l	<1	<1	<1	<1	<1
2-Chlorethylvinyl Ether	ug/l	<1	<1	<1	<1	<1
Chloromethane	ug/l	<1	<1	<1	<1	<1
Chlorodibromomethane	ug/l	<1	<1	<1	<1	<1
Dibromomethane	ug/l	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/l	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/l	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	ug/l	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/l	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/l	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/l	<1	<1	<1	<1	<1
1,1-Dichloroethene	ug/l	<1	<1	<1	<1	<1
Trans-1,2-Dichloroethene	ug/l	<1	<1	<1	<1	<1
1,2-Dichloroethene	ug/l	<1	<1	<1	<1	<1
1,2-Dichloropropane	ug/l	<1	<1	<1	<1	<1
Cis-1,3-Dichloropropene	ug/l	<1	<1	<1	<1	<1
Trans-1,3-Dichloropropene	ug/l	<1	<1	<1	<1	<1
Ethyl Benzene	ug/l	<1	<1	<1	<1	<1
Methylene Chloride	ug/l	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane	ug/l	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/l	<1	<1	<1	<1	<1
Tetrachloroethylene	ug/l	<1	<1	<1	<1	<1

TABLE D-6 (CONT): METALS AND VOLATILE ORGANICS ANALYTICAL RESULTS
SITE 3, AIRCRAFT AND MAINTENANCE HANGAR
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	13-Sep-95
VOLATILE ORGANICS	UNITS	Friday	Saturday	Sunday	Monday	Wednesday
Toluene	ug/l	1	1.11	<1	<1	2.29
1,1,1-Trichloroethane	ug/l	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	ug/l	<1	1.8	<1	<1	<1
Trichloroethylene	ug/l	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/l	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/l	<1	<1	<1	<1	<1
Vinyl Chloride	ug/l	<1	<1	<1	<1	<1
o-Xylene	ug/l	<1	<1	<1	<1	<1
p,m-Xylene	ug/l	<1	<1	<1	<1	<1

TABLE D-7: ADDITIONAL ANALYTICAL RESULTS
SITE 3, AIRCRAFT AND MAINTENANCE HANGAR
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTE WATER CHARACTERIZATION SURVEY
07 - 13 SEPTEMBER 1995

		8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	13-Sep-95
GROUP A & B ANALYTES	**UNITS**	**Friday**	**Saturday**	**Sunday**	**Monday**	**Wednesday**
Chemical Oxygen Demand	mg/l	369	443	710	840	482
Oil and Grease	mg/l	104	200	992	352	185.6
Total Petroleum Hydrocarbon	mg/l	<1	48	160	96	25.6
GROUP E ANALYTES						
Phenols	ug/l	188	510	650	81	55
GROUP G						
Residue Total	mg/l	792	1597	1108	3304	937
Residue, Filterable (TDS)	mg/l	275	180	500	320	450
Residue, Nonfilterable (TSS)	mg/l	205	1405	560	1809	85
Residue, Total Volatile	mg/l	NR*	341	NR*	NR*	NR*
Surfactants-MBAs	mg/l	0.1	0.1	0.2	1.4	2.4
ON SITE ANALYSES						
pH	UNITS	7	8	6.8	6.8	8
Temperature	(°C)	23	24	22	19	22.5

*Not requested for analysis.

Note: Shaded values exceed EHTMUA's permissible concentrations.

TABLE D-8: METALS AND VOLATILE ORGANICS ANALYTICAL RESULTS
SITE 4, AVIATION GROUND EQUIPMENT FACILITY
ATLANTIC CITY AIR NATOINAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	13-Sep-95
METALS	UNITS	Friday	Saturday	Sunday	Monday	Wednesday
Aluminum	mg/l	0.696	1.4	1.31	2.64	1.76
Antimony	mg/l	<0.005	0.006	0.005	0.006	<0.005
Arsenic	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	mg/l	0.078	0.069	0.098	0.145	0.121
Beryllium	mg/l	<0.001	<0.001	<0.001	0.001	0.001
Cadmium	mg/l	0.119	0.039	0.04	0.053	0.044
Total Chromium	mg/l	0.016	0.016	0.017	0.022	0.02
Cobalt	mg/l	<0.050	<0.050	<0.050	<0.050	<0.050
Copper	mg/l	0.651	0.396	0.531	0.834	0.527
Iron	mg/l	9.54	9.8	8.31	15.9	10.9
Lead	mg/l	0.081	0.164	0.092	0.15	0.148
Manganese	mg/l	0.1	0.113	0.111	0.177	0.159
Mercury	mg/l	0.0005	0.0006	0.0006	0.001	0.0006
Molybdenum	mg/l	<0.030	<0.030	<0.030	<0.030	<0.030
Nickel	mg/l	0.028	0.02	<0.020	0.039	0.025
Selenium	mg/l	<0.010	<0.010	<0.010	<0.010	<0.005
Silver	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Thallium	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	mg/l	<0.050	<0.050	<0.050	<0.050	<0.050
Vanadium	mg/l	<0.050	<0.050	<0.050	<0.050	<0.050
Zinc	mg/l	0.556	0.317	0.427	0.828	0.571

TABLE D-8 (CONT): METALS AND VOLATILE ORGANICS ANALYTICAL RESULTS
SITE 4, AVIATION GROUND EQUIPMENT FACILITY
ATLANTIC CITY AIR NATOINAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	13-Sep-95
VOLATILE ORGANICS	UNITS	Friday	Saturday	Sunday	Monday	Wednesday
Benzene	ug/l	<100	<1	<1	<1	<1
Benzyl Chloride	ug/l	NR*	<1	<1	<1	<1
Bromobenzene	ug/l	NR*	<1	<1	<1	<1
Bromodichloromethane	ug/l	NR*	<1	<1	<1	<1
Bromoform	ug/l	NR*	<1	<1	<1	<1
Bromomethane	ug/l	NR*	<1	<1	<1	<1
Carbon tetrachloride	ug/l	NR*	<1	<1	<1	<1
Chlorobenzene	ug/l	<100	1.16	5.13	4.37	5.98
Chlorodibromomethane	ug/l	NR*	<1	<1	<1	<1
Chloroethane	ug/l	NR*	<1	<1	<1	<1
Chloroform	ug/l	NR*	<1	<1	<1	<1
2-Chlorethylvinyl Ether	ug/l	NR*	<1	<1	<1	<1
Chloromethane	ug/l	NR*	<1	<1	<1	<1
Chlorodibromomethane	ug/l	NR*	<1	<1	<1	<1
Dibromomethane	ug/l	NR*	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/l	<100	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/l	<100	<1	<1	<1	<1
1,4-Dichlorobenzene	ug/l	<100	11.8	30.99	21.52	36.8
Dichlorodifluoromethane	ug/l	NR*	<1	<1	<1	<1
1,1-Dichloroethane	ug/l	NR*	<1	<1	<1	<1
1,2-Dichloroethane	ug/l	NR*	<1	<1	<1	<1
1,1-Dichloroethene	ug/l	NR*	<1	<1	<1	<1
Trans-1,2-Dichloroethene	ug/l	NR*	<1	<1	<1	<1
1,2-Dichloroethene	ug/l	NR*	<1	<1	<1	<1
1,2-Dichloropropane	ug/l	NR*	<1	<1	<1	<1
Cis-1,3-Dichloropropene	ug/l	NR*	<1	<1	<1	<1
Trans-1,3-Dichloropropene	ug/l	NR*	<1	<1	<1	<1
Ethyl Benzene	ug/l	<100	<1	<1	<1	<1
Methylene Chloride	ug/l	NR*	3.57	1.41	<1	<1
1,1,1,2-Tetrachloroethane	ug/l	NR*	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/l	NR*	<1	<1	<1	<1
Tetrachloroethylene	ug/l	NR*	<1	<1	<1	<1

TABLE D-8 (CONT): METALS AND VOLATILE ORGANICS ANALYTICAL RESULTS
SITE 4, AVIATION GROUND EQUIPMENT FACILITY
ATLANTIC CITY AIR NATOINAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	13-Sep-95
VOLATILE ORGANICS	UNITS	Friday	Saturday	Sunday	Monday	Wednesday
Toluene	ug/l	<100	6.26	3.11	1.85	1.19
1,1,1-Trichloroethane	ug/l	NR*	<1	<1	<1	<1
1,1,2-Trichloroethane	ug/l	NR*	<1	<1	<1	<1
Trichloroethylene	ug/l	NR*	<1	<1	<1	<1
Trichlorofluoromethane	ug/l	NR*	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/l	NR*	<1	<1	<1	<1
Vinyl Chloride	ug/l	NR*	<1	<1	<1	<1
o-Xylene	ug/l	<100	<1	<1	<1	<1
p,m-Xylene	ug/l	<100	<1	<1	<1	<1

*Not requested for analysis.

Note: Shaded values exceed ETHMUA's permissible concentrations.

TABLE D-9: ADDITIONAL ANALYTICAL RESULTS
SITE 4, AVIATION GROUND EQUIPMENT FACILITY
ATLANTIC CITY AIR NATIONAL GUARD BASE WASTE WATER CHARACTERIZATION SURVEY
07 - 13 SEPTEMBER 1995

		8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	13-Sep-95
GROUP A & B ANALYTES	**UNITS**	**Friday**	**Saturday**	**Sunday**	**Monday**	**Wednesday**
Chemical Oxygen Demand	mg/l	710	405	514	561	200
Oil and Grease	mg/l	248	112.8	480	140.8	236.8
Total Petroleum Hydrocarbon	mg/l	128	49.6	96	51.2	68.8
GROUP E ANALYTES						
Phenols	ug/l	425	233	10	42	<10
GROUP G						
Residue Total	mg/l	792	529	925	865	1179
Residue, Filterable (TDS)	mg/l	280	210	245	330	160
Residue, Nonfilterable (TSS)	mg/l	205	165	435	370	15
Surfactants-MBAs	mg/l	0.4	0.3	0.1	1.2	2.8
ON SITE ANALYSES						
pH	UNITS	7	5	6	6	6
Temperature	°C	23	24	21	24	24

Note: Shaded values exceed ETHMUA's permissible concentrations.

TABLE D-10: METALS AND VOLATILE ORGANICS ANALYTICAL RESULTS
SITE 5, CIVIL ENGINEERING, AND MOTOR POOL
ATLANTIC CITY AIR NATOINAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	13-Sep-95
METALS	**UNITS**	**Friday**	**Saturday**	**Sunday**	**Monday**	**Wednesday**
Aluminum	mg/l	0.375	0.729	0.862	2.01	0.642
Antimony	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	mg/l	<0.050	<0.050	<0.050	0.068	<0.050
Beryllium	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/l	0.006	0.004	0.002	0.003	0.008
Total Chromium	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	mg/l	<0.050	<0.050	<0.050	<0.050	<0.050
Copper	mg/l	0.083	0.148	0.094	0.188	0.144
Iron	mg/l	1.94	1.7	1.89	2.46	4.96
Lead	mg/l	<0.020	<0.020	<0.020	<0.020	0.043
Manganese	mg/l	0.032	0.069	0.117	0.223	0.068
Mercury	mg/l	0.0002	0.0014	<0.0002	0.0007	0.0003
Molybdenum	mg/l	<0.030	<0.030	<0.030	<0.030	<0.030
Nickel	mg/l	<0.020	<0.020	<0.020	0.028	<0.020
Selenium	mg/l	<0.010	<0.010	<0.010	<0.010	<0.005
Silver	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Thallium	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	mg/l	<0.050	<0.050	<0.050	<0.050	<0.050
Vanadium	mg/l	<0.050	<0.050	<0.050	<0.050	<0.050
Zinc	mg/l	0.19	0.279	0.423	1.03	0.342

TABLE D-10 (CONT): METALS AND VOLATILE ORGANICS ANALYTICAL RESULTS
SITE 5, CIVIL ENGINEERING, AND MOTOR POOL
ATLANTIC CITY AIR NATOINAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	13-Sep-95
VOLATILE ORGANICS	UNITS	Friday	Saturday	Sunday	Monday	Wednesday
Benzene	ug/l	<20	<1	<1	<1	<1
Benzyl Chloride	ug/l	<20	<1	<1	<1	<1
Bromobenzene	ug/l	<20	<1	<1	<1	<1
Bromodichloromethane	ug/l	<20	<1	<1	<1	<1
Bromoform	ug/l	<20	<1	<1	<1	<1
Bromomethane	ug/l	<20	<1	<1	<1	<1
Carbon tetrachloride	ug/l	<20	<1	<1	<1	<1
Chlorobenzene	ug/l	<20	<1	<1	<1	<1
Chlorodibromomethane	ug/l	<20	<1	<1	<1	<1
Chloroethane	ug/l	<20	<1	<1	<1	<1
Chloroform	ug/l	<20	<1	<1	<1	<1
2-Chlorethylvinyl Ether	ug/l	<20	<1	<1	<1	<1
Chloromethane	ug/l	<20	<1	<1	<1	<1
Chlorodibromomethane	ug/l	<20	<1	<1	<1	<1
Dibromomethane	ug/l	<20	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/l	<20	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/l	<20	<1	<1	<1	<1
1,4-Dichlorobenzene	ug/l	<20	<1	<1	<1	<1
Dichlorodifluoromethane	ug/l	<20	<1	<1	<1	<1
1,1-Dichloroethane	ug/l	<20	<1	<1	<1	<1
1,2-Dichloroethane	ug/l	<20	<1	<1	<1	<1
1,1-Dichloroethene	ug/l	<20	<1	<1	<1	<1
Trans-1,2-Dichloroethene	ug/l	<20	<1	<1	<1	<1
1,2-Dichloroethene	ug/l	<20	<1	<1	<1	<1
1,2-Dichloropropane	ug/l	<20	<1	<1	<1	<1
Cis-1,3-Dichloropropene	ug/l	<20	<1	<1	<1	<1
Trans-1,3-Dichloropropene	ug/l	<20	<1	<1	<1	<1
Ethyl Benzene	ug/l	<20	<1	<1	<1	<1
Methylene Chloride	ug/l	<20	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane	ug/l	<20	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/l	<20	<1	<1	<1	<1
Tetrachloroethylene	ug/l	<20	<1	<1	<1	<1
Toluene	ug/l	<20	>100	2.18	1.66	<1

TABLE D-10 (CONT): METALS AND VOLATILE ORGANICS ANALYTICAL RESULTS
SITE 5, CIVIL ENGINEERING, AND MOTOR POOL
ATLANTIC CITY AIR NATOINAL GUARD BASE WASTEWATER CHARACTERIZATION SURVEY
07-13 SEPTEMBER 1995

		8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	13-Sep-95
VOLATILE ORGANICS	UNITS	Friday	Saturday	Sunday	Monday	Wednesday
1,1,2-Trichloroethane	ug/l	<20	<1	<1	<1	<1
Trichloroethylene	ug/l	<20	<1	<1	<1	<1
Trichlorofluoromethane	ug/l	<20	<1	<1	<1	<1
1,2,3-Trichloropropane	ug/l	<20	<1	<1	<1	<1
Vinyl Chloride	ug/l	<20	<1	<1	<1	<1
o-Xylene	ug/l	<20	<1	<1	<1	<1
p,m-Xylene	ug/l	<20	<1	<1	<1	<1

TABLE D-11: ADDITIONAL ANALYTICAL RESULTS
SITE 5, CIVIL ENGINEERING, VEHICLE MAINTENANCE, FUELS LAB
NEW JERSEY AIR NATIONAL GUARD BASE WASTE WATER CHARACTERIZATION SURVEY
07 - 13 SEPTEMBER 1995

		8-Sep-95	9-Sep-95	10-Sep-95	11-Sep-95	13-Sep-95
GROUP A & B ANALYTES	**UNITS**	**Friday**	**Saturday**	**Sunday**	**Monday**	**Wednesday**
Chemical Oxygen Demand	mg/l	560	880	1330	2000	770
Oil and Grease	mg/l	120	185	224	57.6	153.6
Total Petroleum Hydrocarbon	mg/l	344	32	80	160	57.2
GROUP E ANALYTES						
Phenols	ug/l	300	200	23	74	65
GROUP G						
Residue Total	mg/l	813	1210	1922	2486	1106
Residue, Filterable (TDS)	mg/l	335	800	215	390	605
Residue, Nonfilterable (TSS)	mg/l	175	410	350	450	45
Surfactants-MBAs	mg/l	1.6	0.7	0.3	3	15
ON SITE ANALYSES						
pH	UNITS	6	5	5.5	8	6
Temperature	°C	25	17	22		24

Note: Shaded values exceed ETHMUA's permissible concentrations.

APPENDIX E
FIGURES

FIGURE E-1: COD Levels In Wastewater Samples

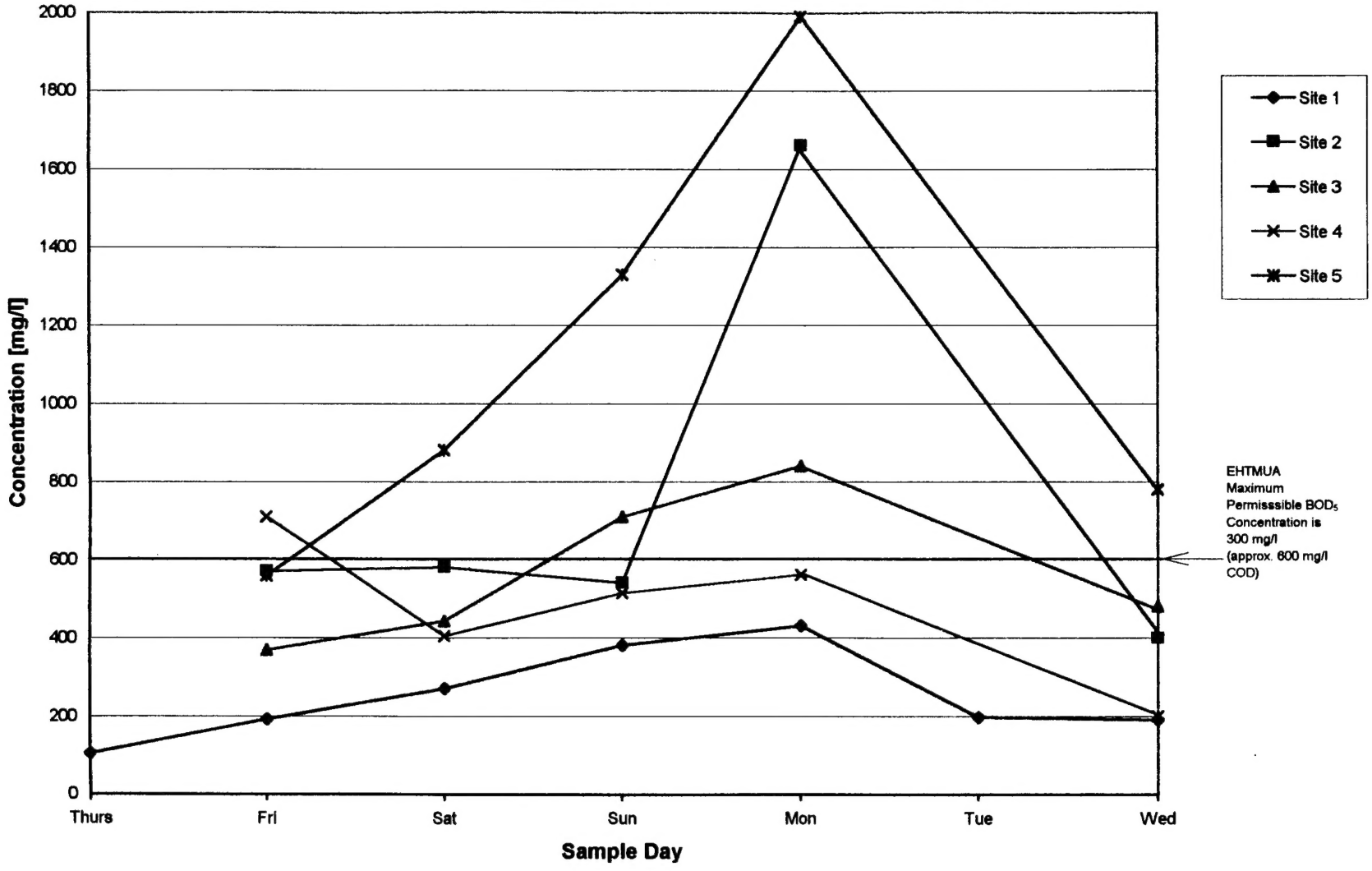


FIGURE E-2: Oil and Grease Levels in Wastewater Samples

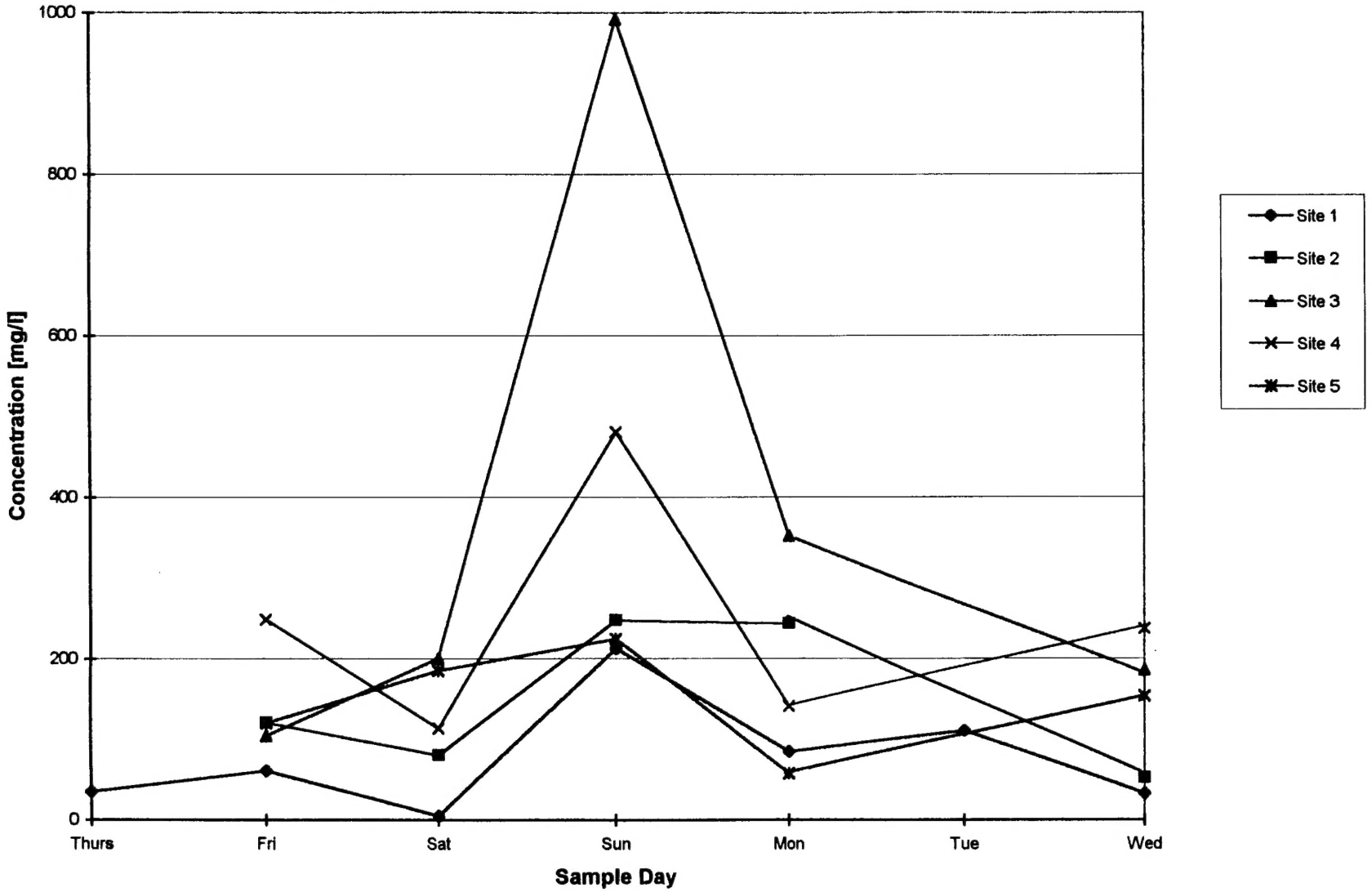


FIGURE E-3: Phenol Levels In Wastewater Samples

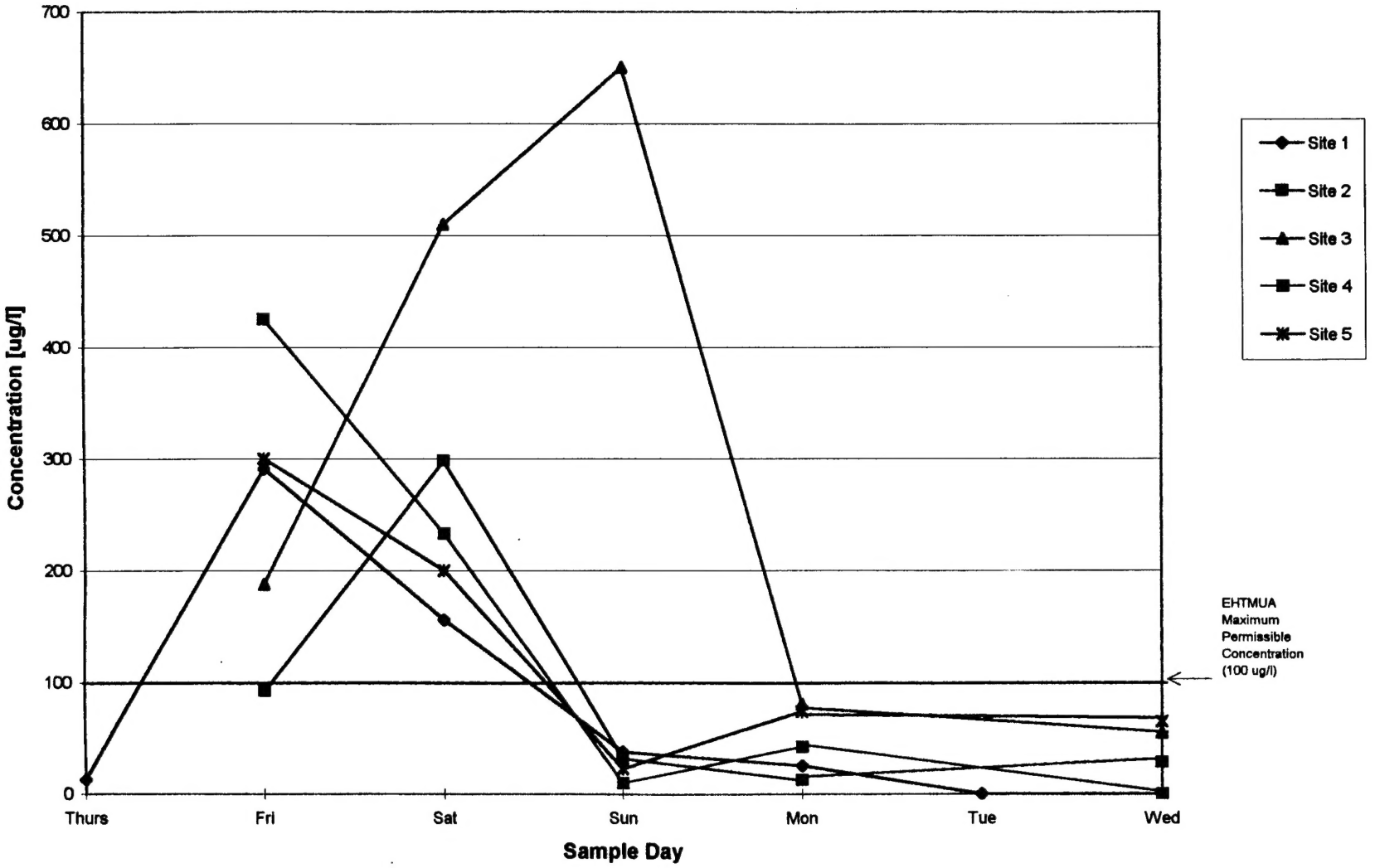


FIGURE E-4: pH Levels in Wastewater Samples